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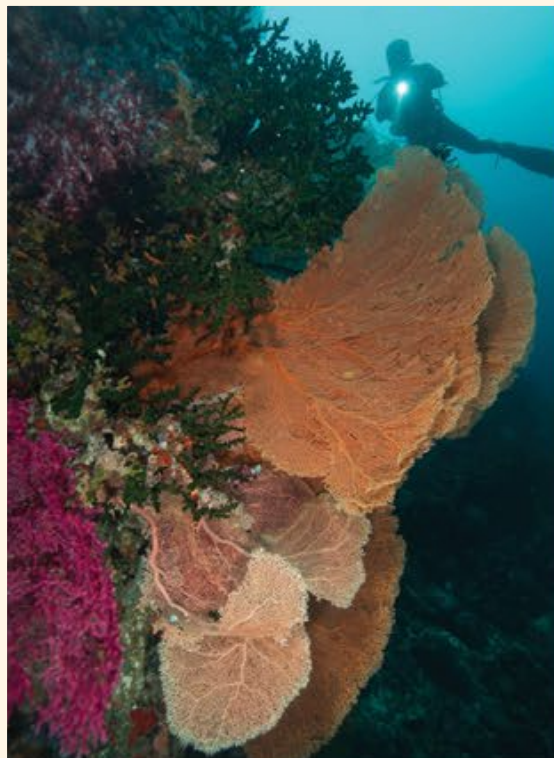
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FACE TO FACE WITH HAMMERHEADS

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BE THE VOICE

**Kids Sea Camp Adventures
inspires young diver to become
new advocate for the ocean**

Photo by Raman Sarin

By Audrey Sarin, age 13, PADI Open Water Diver and working on becoming a Junior Rescue Diver

My very first dive will always be in my memory — the very first time I was able to become a part of the underwater world.

I had been excitedly waiting for that moment, even before I had stepped off the airplane into Grand Cayman's sun. My parents had always spun elaborate tales of their experiences diving and now it was my turn to see the wondrous world they had shared under the waves.

On that day of my first dive, the thing that struck me most was that I could actually breathe underwater. I took a deep breath in, to make sure I wasn't dreaming. I could see the surface was a good fifteen feet above me, but I was breathing. I floated above the sea bottom and just breathed. I beheld the world around me, as I descended into the blue.

Everything was behind me now, as if in another life. I couldn't hear anything but my own inhales, and those were very quiet,

although Darth-Vader reminiscent. When I exhaled, I could hear absolutely nothing else. I now understand why the ocean is sometimes called the 'Silent World.'

At first, I saw nothing, but upon closer inspection, I saw spiky red sea urchins populating the ocean floor. The urchins fascinated me. I had seen urchins very similar to them in the touch tanks at the aquarium, but I had always assumed that they lived in the deep ocean, not right here off the edge of a dock.

The sun showed right through the water, lighting up all the coral and fish around me. I am filled with awe at all I can see, and at first I don't know where to look, perhaps the deep sapphire blue out in the distance, or the small yellow fishes not two feet away.



My problem evaporated very quickly, and soon I knew exactly where to look. As far as the eye could see there were brilliant oranges, pinks and reds. The sea-fans were made of a spider web pattern, lacy strands of vivid coral with little holes in between. The tide washed in and out, swishing the sea-fans every time it went. The ocean's synchronized dancers captivated me:



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Tide in, sea-fans lean towards shore.. Tide out, sea-fans lean away. Their routine was almost hypnotic, dancing to their own silent song.

I remember spotting my first lobster, a beady-eyed creature that was far larger than any I had seen lying on the ice in Pike Place Market at home in Seattle. The way it moved was completely alien to me. I had only ever seen a live lobster in a tiny restaurant tank, crawling over dozens of its siblings.

It's been years since my first dive, and Kids Sea Camp has given me much confidence as a diver. Each experience has inspired my interests in marine science. I have met other kids and families who share my interest in diving. Kids Sea Camp is very often the highlight of my summer! It's what I talk about when I go back to school and write essays about when we get a free topic. I have attained many certifications such as Advanced Open Water Diver, Drift, Shark Aware and even an Underwater Photographer specialty.

I was terrified of sharks, but now I've learned so much about them and other marine life. I have been diving with schooling hammerheads at Darwin's Arch in the Galapagos, black tips at Blue Corner in Palau, grey reef sharks and mantas in Yap, and stingrays in Grand Cayman. I'm just not afraid anymore.

I've learned a lot about ocean-related issues, but the declining shark population is what I've been focusing on the most. While in Palau, I attended a KSC lecture about the value of a shark's alive vs. dead. The amount of tourism that sharks create actually outweighs the profit made from shark finning. I was fascinated by this and I have been driven to do more — to stay informed about shark finning and other shark issues. Whenever I hear someone make a negative shark comment or reference Jaws, I launch into my mini-speech about sharks and how important they are for our oceans.

You see, diving is my passion. It has let me see and learn about creatures I never knew existed.

I love going to Kids Sea Camp and being able to meet new people and dive with other teens my age. I also like that my parents can dive with adults and I can dive with new found friends.



Photo by Margo Peyton

KSC also has fun excursions while we're not diving. My favorite was Jellyfish Lake in Palau. It was so peculiar to swim with thousands of jellies and be able to touch them without getting stung!

Lastly, I enjoy diving as a family and having time to spend as a family. I don't feel like I'm on a completely separate vacation. I've done a lot of writing or speaking about my diving experiences; I feel it's important and our responsibility to protect the oceans. I encourage my audience to be active in conservation and consider scuba diving. I know that most people reading this are divers and they already have the oceans close to their hearts. To you I will say the

"I've done a lot of writing or speaking about my diving experiences; I feel it's important and our responsibility to protect the oceans."

most influential thing you can do for conservation is to educate a young person. Bring your children, grandchildren, your godchildren, or your nieces and nephews on a dive vacation, and share with them the underwater world that you love. Present a slideshow at a local school, library, or teen center. If you can pique their interest in diving, even better! Tell families about Kids Sea Camp; Kids 10+ can get their Open Water certifications and those younger can do SASY or Seal Team. 15 PADI dive courses have college credits. Getting the next generation to care about the ocean is key.

Margo Peyton rocks! Margo is the creator of Kids Sea Camp and she takes time for each and every family and genuinely wants

to know how she can serve and enrich their experiences. She's also an excellent dive instructor and event planner; she has fun activities arranged for the whole family (4 year-olds to grandparents!) up her sleeve. I think that Margo is secretly Superwoman.

Since I have gotten all of my many certifications and done most of my diving through Kids Sea Camp, I closely tie KSC to my diving "career". I strongly believe that Kids Sea Camp has been a big part of who I am today. I'm more globally aware and confident because of my certifications. For all of this I

also say THANK YOU to my mom and dad for choosing Kids Sea Camp for our family vacations!

My favorite animal encounters so far have been with sea lions and whale sharks in the Galapagos. I felt very safe and well informed, and loved sharing those dives with new friends Melea and JB, as well as my mom and dad.

One of my most favorite non-dive excursions was in Palau, with Sam's Tours — bathing myself in a Milky Way mud bath. Each trip gives me authentic activities that entail learning about the culture and people.

I am excited to be attending Kids Sea Camp Grand Cayman over my spring break; I'm going to be taking a PADI Jr.

Rescue Diver course. I feel it will make me a safer diver and a better buddy. I'm very excited because Rescue Diver is the next big step in dive education and my goal is to become a PADI dive master when I'm 18.

Remember, the ocean is silent — it has no voice. It cannot speak for itself in debates about marine preserves or commercial fishing laws. I am eager for my voice to be a voice of the ocean, to be a protector and advocate for it. I am a certified diver with just under fifty dives, and after every single dive, I feel a renewed passion towards my goal — to be the voice. I encourage you to travel and to dive with your families, experience the underwater silent world, and become a voice too.



ON THE COVER

Rebreather instructor Tyler Hammel; dive gear from The Dive Station in Orlando, Florida.

PHOTOGRAPH BY
BILL DOSTER

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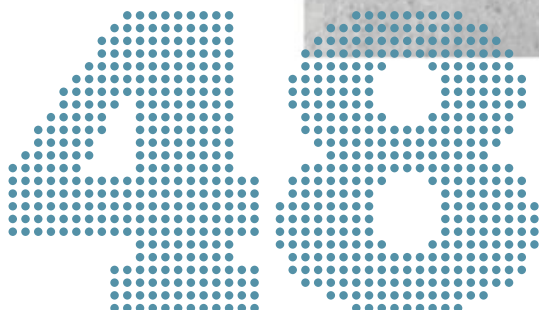
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FROM TOP: TANYA G. BURNETT; MICHAEL KRAUS

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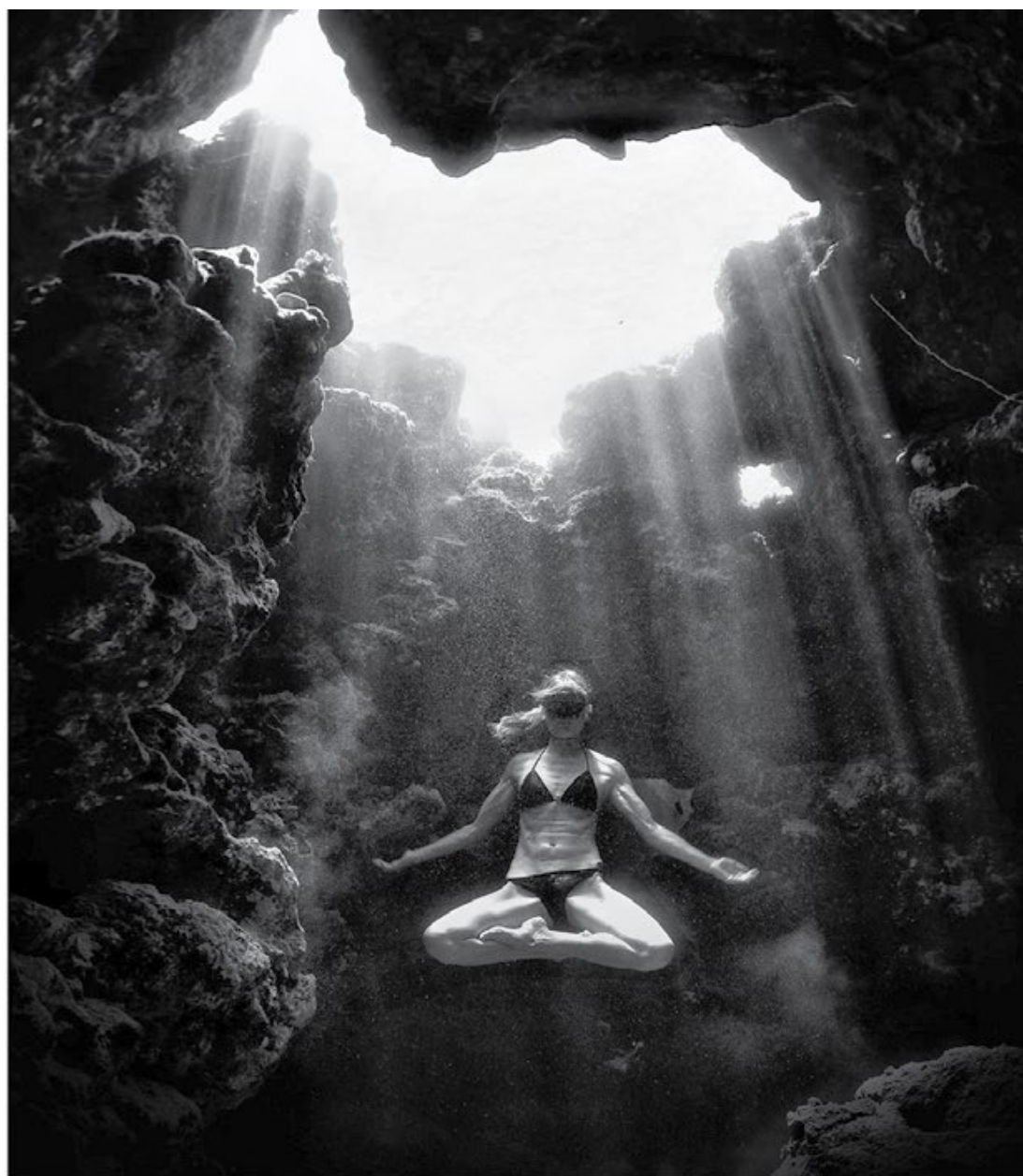
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Jacques de Vos South Africa

At the end of 2007 while enjoying 'days off' from his position as an engineer in the oilfield services, Jacques de Vos was inspired by his scuba instructor (also a talented underwater photographer) to purchase his first underwater compact camera and Ikelite housing. Since then he has qualified as a SCUBA instructor and Commercial Diver, and upgraded through numerous camera systems. He now shoots both stills and video and has developed the skill set to do all of this while freediving.



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TALK

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THE DEVIL WEARS SCUBA

I sometimes joke in the office about being Miranda Priestly, especially at the beginning of the semester when I'm meeting a new crop of interns from the journalism program at the University of Central Florida. But the truth is, I'd rather be wearing a wetsuit and fins than the Prada coats, handbags, and shoes Meryl Streep (as Priestly) wears in *The Devil Wears Prada*.

While producing *Scuba Diving* is nothing like working on the fictional *Runway* in *TDWP*, working on the latest redesign — we've had several in the magazine's 22-year history (the covers below show how even our logo has evolved over the years) — was not without its challenges. Creative Director Dave Weaver, Art Director Monica Alberta and Photo Editor Kristen McClarty first met to discuss changes in October 2014. At the time, choosing the March/April 2015 issue for premiering the redesign seemed completely doable.

But as anyone who has undertaken a kitchen renovation knows, there were setbacks along the way. We started by redesigning the magazine's architecture to make it easier for readers to navigate. We auditioned several illustrators before choosing the artists for Lessons for Life (page 61) and What It's Like (page 29).



We created new columns, including Dive Training (page 57), to strengthen our core edit mission. Every inch of the magazine was overhauled — all while we met our deadlines, tested gear, and took a few dive trips.

I can't say enough about what the team has accomplished. And we did it without the drama of *Runway*. Drop us a line, and let us know what you think.

— PATRICIA WUEST, EDITOR-IN-CHIEF

TRENDING NOW

Sylvia A. Earle
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APRIL 2015

FROM LEFT: JON WHITTLE; AWASHIMA MARINE PARK/GETTY IMAGES

LETTERS

TRUE STORIES?

The Lessons for Life articles help me to think about issues and emergencies that might happen while diving.



But I've always wondered — are the stories in this section real analyses of real events, or just fictional stories designed to highlight possible dive-accident scenarios and to make you think?

— MARK ANDERSEN, BOWIE, MD

EDITOR REPLIES:

Mark, great question, and for writing us, we're sending you an IST Sports

SMP204 mask. The stories in Lessons For Life are based on real dive accidents, but for legal reasons, names and some details have been changed. We publish these stories to reinforce safe practices while diving. Many accidents can be avoided as long as you remember to follow the rules and stay within the limits of your training.

YOU LOVE US ...

I'm in love with the Top 100 issue (Jan/Feb 2015). As a diver, I'm always looking for new places to have

adventures. The Top 100 is a bucket list for me, as thousands of readers can't be wrong. This issue has gorgeous pictures of specific locations, a summary of what I might find, and a website for more information — how is this not the greatest scuba resource ever?

Although the Top 100 makes me realize I haven't traveled nearly as much as I'd like, the hope of saving, planning, and visiting somewhere new and recommended gives me child-on-Christmas level excitement.

— MELISSA BUROVAC, LAWAI, KAUAI, HI

... YOU LOVE US NOT

I'd like to suggest publishing the Top 100 issue less frequently. I've been a subscriber for more than 15 years, and this issue has become very boring. It's mostly the same places making the same lists year after year. I doubt that many new and fabulous destinations are going to suddenly emerge within the year between annual reports. To keep it interesting, I'd publish Top 100 every other year at the most; every three to five years would probably be better.

— ELIZABETH CRAPO, VIA EMAIL

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CURRENTS

NOTES, NEWS AND STUFF YOU CAN USE

NEW AND NOTEWORTHY A Civil War-era wreck and an ancient forest are discovered underwater PG.16 **OCEAN ACTION** Fighting for conservation gets trashy PG.19 **SEA HERO** Here's how to nominate a Sea Hero PG.21 **FIRST LOOK** The hottest new dive gear on the market PG.22

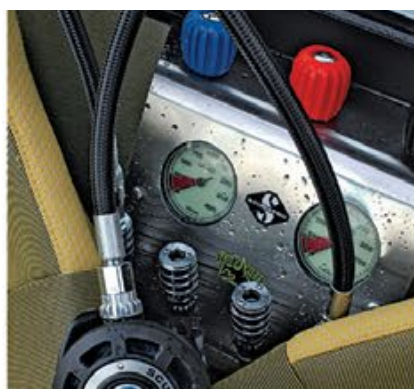


"DIVE IT AGAIN, JAMES!"

That new convertible in your garage may grab the attention of Bond-girl look-alikes topside, but how does it handle underwater? Enter the sQuba car, a sexy submersible fashioned after the Lotus Esprit that stole the show in the 1977 Bond flick *The Spy Who Loved Me*. While the underwater capabilities of the original were a farce, the sQuba is anything but. *(continued)*

(continued) Priced at \$2 million, this zero-emission electric vehicle has to be at the top of every Bond-lover's wish list. After reaching a land speed of 75 mph, sQuba transitions into a sea-faring convertible until — with a pull of a lever — it descends to 33 feet. Integrated-air tanks and regulators come standard on the drop-top concept car, which was developed by Swiss company Rinspeed, and its passengers can remain at depth for up to an hour. Don't worry if you find yourself fumbling with your reg: A laser-guided sensor allows the car to steer autonomously, as long as someone's in the diver's seat.

The challenge for Rinspeed's CEO Frank M. Rinderknecht was to ensure that the car maneuvered as well through the water as it does on the street. The first step was to ditch the combustion engine for three



INSIDE THE CAR

Dive Gadgets

Rinspeed's sQuba car comes standard with two Scubapro regs, and integrated-air tanks for driver and passenger. To submerge sQuba, the driver must simply pull a lever.

Junk in the Trunk

Three electric motors work to propel sQuba: one for on land and two for underwater. The zero-emission electric vehicle is powered by rechargeable lithium-ion batteries.

Additional Specs

When passengers are on board, sQuba is capable of driving autonomously. The drop-top allows divers to exit quickly if needed; the car automatically ascends if the driver evacuates his seat.

electric motors — one for on land, two for the sea. Then, powerful electric stern propellers and bow jet drives were added to improve maneuverability and speed; sQuba is capable of 3 mph speeds on the surface, and nearly 2 mph underwater. Measuring 12.5 feet long and about 6 feet wide, the car is built on the same steel chassis as the Lotus, though it's safe to say that it's quite a bit sleeker than 007's version. Aside from boosting the cool factor, sQuba's open-top design allows passengers to quickly escape in the event of an emergency, and its interior is resistant to both fresh and salt water.

Though Rinderknecht said he doesn't imagine his creation will be spotted speeding down the highway often, it makes for a great toy for divers with the means.

— BY ASHLEY ANNIN

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BE YOUR OWN BUDDY

SELF-RELIANCE STARTS WITH YOU

BY TRAVIS MARSHALL



Ask any experienced diver, and they'll tell you the key to being a good, safe diver is self-reliance — showing up for every dive with the tools, skills and information you need to handle small problems before they become big ones, and not expecting someone else to do it for you. Here's a checklist of points to make you more self-reliant.

Always Bring Backup Whether it's extra lights or a backup analyzer, make sure you always have the right equipment — and the right backup equipment — so you never have to call a dive because of a gear malfunction.

Sweat the Small Stuff Even a tiny O-ring can be a reason to call a dive if you don't have a replacement. You should always carry a save-a-dive kit with spare O-rings, fin and mask straps, extra regulator mouthpieces, and zip ties.

Quick Fixes A couple of basic tools can also be a dive-saver. With a set of Allen wrenches and a crescent wrench, you can swap out a leaking low-pressure hose and be back in the water.

Play It Safe Hope for the best, but prepare for the worst. That means making safety equipment a standard part of your setup. Attach a whistle or air-powered signaling device to your inflator hose, and use your BC pocket to stash surface-signaling gear. DAN sells a great kit that includes a surface-marker buoy, signal mirror and signal strobe.

CURRENTS

EARTH DAY

10 THINGS YOU'D MISS IF THE OCEAN CALLED IT QUILTS

BY DR. SEBASTIAN TROENG

Senior vice president and managing director of the Betty and Gordon Moore Center for Science and Oceans at Conservation International

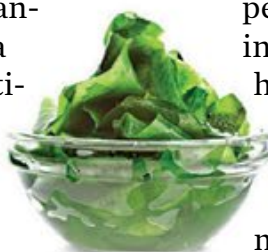


Humans have taken a lot from the ocean — but what if the ocean called it quits? Just consider the remarkable range of benefits we get from healthy oceans:

1 FOOD PROVISION through wild fisheries and fish farming. About 4.3 billion people get around 15 percent of their animal protein and essential nutrition from seafood.

2 NATURAL PRODUCTS like shells, seaweed and fish oil. Each year, people consume almost 23 million tons of seaweed alone, valued at more than \$6 billion.

3 COASTAL PROTECTION. Natural barriers like coral reefs, mangroves and sea grass beds mitigate impacts from major storms and tsunamis.



4 ARTISANAL FISHING OPPORTUNITIES for those who don't have other options for employment and depend on the ocean for their sustenance. There are over 12 million artisanal fishers worldwide.

5 ECONOMIES AND LIVELIHOODS for people on the coasts. Worldwide, an estimated 350 million jobs depend on the ocean.

6 BIODIVERSITY. The IUCN Red List categorizes 11.7 percent of the 8,459 marine species assessed to date as threatened with a high risk of extinction in the wild.

7 CLEAN WATER — free from pollutants — that people can swim and wash in without putting their health at risk. There are already over 400 dead zones worldwide, where lack of oxygen prevents many forms of life.

8 A SENSE OF PLACE, including cultural, spiritual and aesthetic benefits. In the United States, 39 percent of the population lives in coastal counties, and their lives are shaped by living near the ocean.

9 CARBON STORAGE. The ocean captures carbon dioxide from the atmosphere and buries it in sediments to mitigate climate change. Mangroves capture five times as much carbon per acre as tropical rainforests, but these "blue carbon" habitats are quickly being lost at a rate two to four times faster.

10 TOURISM AND RECREATION. In the United States, more than 40 percent of people visit the beach each year.

This was originally published on CI's Human Nature Blog as part of the Nature Is Speaking series.



CIVIL WAR SURVIVOR

USS *NARCISSUS* IS
FLORIDA'S 12TH
UNDERWATER
ARCHAEOLOGICAL
PRESERVE
BY MARY FRANCES EMMONS

A Civil War wreck off the Florida coast isn't a common sight. And one that you can dive? That's cause for celebration, especially when the wreck has been named Florida's 12th underwater archaeological preserve.

Built in 1863 as the *Mary Cook*, the steam tug was commissioned by the U.S. Navy, and renamed USS *Narcissus*. It survived the Battle of Mobile Bay but eventually was sunk at its mooring in 1864. At the end

of the war, after extensive repairs, it was relaunched. The Union tug came to a horrific end off Tampa's Egmont Key on Jan. 4, 1866, when it struck a shoal during a storm and its boiler exploded, taking all of its 26 sailors to an early grave.

Located about 2.75 miles off Egmont, *Narcissus* came to rest on a sandy bottom in about 15 feet of water. Despite its catastrophic end, many of the major features of the ship have come to rest in their original positions. (Some elements, such as the mostly intact engine, have toppled over in place.) Depending on sand cover, even some hull structure is still visible.

Its designation as an underwater archaeological preserve early this year by the Florida Department of

State adds *Narcissus* to a list that includes a Spanish galleon, a river steamboat and a battleship.

"The USS *Narcissus* is a fascinating underwater preserve for divers," Florida's Secretary of State Ken Detzner said at the dedication. "And it offers a unique look at this nation's naval history."

Florida's shipwreck preserves — which attract nearly 30,000 visitors a year — are created through partnerships between local communities and the state in an effort to protect Florida's fantastically varied maritime history.

Visiting divers will find the sites marked with a monument.

» For More Info

You'll find more info and underwater maps at museumsinthesea.com.

DIVE DEEPER

For more info, go to museumsinthesea.com.

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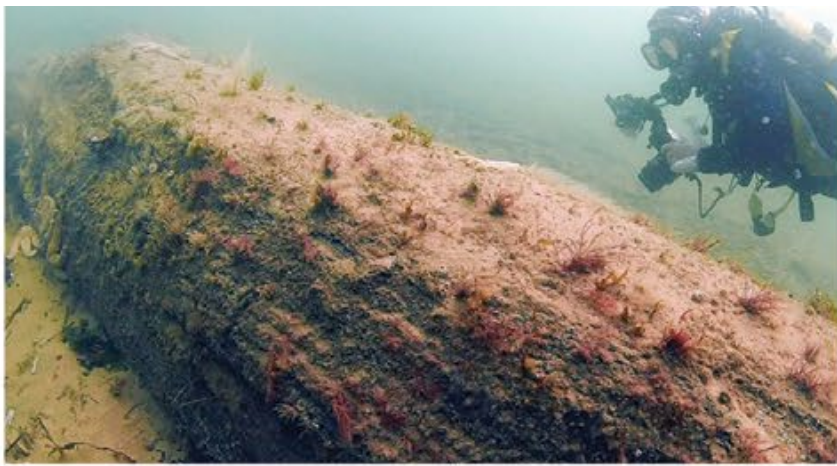
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AN UNDERWATER MIDDLE EARTH

BRITISH DIVER DISCOVERS ANCIENT FOREST OFF U.K. COAST **BY PATRICIA WUEST**

At one time it would have been a full-blown Tolkien-style forest, stretching for hundreds of miles," says Rob Spray, who, along with Dawn Watson, runs the marine survey company Seasearch.

"It would have looked like a scene from *The Hobbit* or *The Lord of the Rings*, which is something we don't get in this

country anymore."

Spray is talking about Watson's discovery off the village of Cley next the Sea in Norfolk, England — the underwater remains of a mighty Doggerland oak forest, probably flattened by a tsunami more than 8,000 years ago.

Doggerland was a vast landmass that connected Great Britain to

mainland Europe during and after the last ice age until it was flooded.

"I initially thought I was looking at a section of very old shipwreck," says Watson. "When I saw the first whole tree appearing out of glacial clay, I realized it was very old indeed. It was very exciting and eerie."

» **For More Info**
seasearch.org.uk

DESCENDING ON D-DAY

DIVERS BRING UNDERWATER AFTERMATH OF WORLD WAR II TO THE SURFACE

BY SAMANTHA HENRY

More than 70 years after D-Day, remnants of the battle remain scattered across the seafloor. The wrecks of Normandy are rife with history, and diver Catherine Connors is on a mission to discover their secrets.

Along with a team of divers, Connors is embarking on a mission to photograph the Normandy seabed so anyone can connect to its history. Over the course of the next few years, her team will use photos and videos to document the war graves.

"You can't just turn up with a boat and

dive when you fancy," Connors says. Disturbing the wrecks is against French law, and the team strictly adheres to that. Some ships were 30 or 40 years old when commissioned for the war; adding 70 years underwater makes penetration too dangerous.

Connors says she saw her favorite finds while her camera was broken; she didn't relish surfacing without photos.

"I'm free to dive these waters today because of those who lost their lives there."

To help the team continue its work, visit gofundme.com/wreck-week.

DIVE DEEPER

For more info, go to scubadiving.com/DDay-wrecks.



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WASHED ASHORE

MISSION Working in the community to educate and raise awareness about plastic pollution

HQ Bandon, Oregon **YEAR FOUNDED** 2010 **CONTACT** info@washedashore.org

PROJECT Washed Ashore has found beauty in the beast that's plaguing the ocean: marine debris. More than 11 tons of water bottles, lighters, beach shovels and other plastic pollutants collected from the coastline are woven together in the likeness of the creatures most threatened by the discarded trash — from sea lions and turtles to octopuses and sharks.

1 VOLUNTEER

The Washed Ashore Project relies heavily on volunteers, and opportunities abound for divers and nondivers to get involved. Take action during your dives and collect all the plastic debris you can carry, and then bring it to the Washed Ashore HQ. If you're not a local, you can ship the plastic you collect. More than 10,000 people have made critical contributions to the nonprofit across the country.

2 HOST AN EXHIBIT

The Project features a unique traveling exhibit that's fully customizable based on your community's needs. Local events feature between eight and 18 sculptures, and include programs to emphasize the five R's of preventing pollution: reduce, refuse, reuse, repurpose and recycle. Can't find an exhibit close to home? Visit an existing Washed Ashore display at SeaWorld San Diego, San Antonio and Orlando.

3 COMMISSION ART

Make a positive change in the environment by commissioning a sculpture specific to your business, aquarium, science center or museum. Want to keep the conservation mission going in your community? The Washed Ashore project offers a variety of educational workshops to expand the message of positive ocean action from coast to coast. Opportunities for donations and sponsorships are available.



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HOW TO... DIVE AT NIGHT SAFELY

TRUST US: THERE ARE NO MONSTERS HIDING UNDER THE CORAL HEADS

BY PATRICIA WUEST



Are you afraid of the dark? Many divers are timid about giant striding into a black sea. Follow our tips to just sit back and enjoy the show:

1 START AT DUSK You'll have some daylight to gear up and be underwater as darkness sets in. You'll also have the chance to see the reef transition from the day shift to the night crew.

2 THINK AHEAD Review hand signals before getting in the water. (You can shine the light on your hands so your buddy can see what you're communicating, or make signals using your light.) Signal "OK," "Yes" and "No" by moving your light in a circle, up and down, and side to side.

3 USE TWO LIGHTS You'll need a primary and a backup light. The primary should be larger and brighter. Never shine your light in anyone's face — you'll ruin his night vision.

4 KNOW THE DRILL If your primary light fails, end the dive. If you become separated from your buddy, get vertical, and shine your light outward while turning a full circle. If you surface far from the boat, point your light at the boat until you get the crew's attention, then shine it down on your head so the crew can see you clearly.

5 FIND YOUR WAY HOME The boat or dock should be marked with a flashing strobe to help you navigate back to your starting point. If your operator has other methods or rules, be sure to follow them.

SHUTTERSTOCK. OPPOSITE COURTESY IMAGES. FROM LEFT: SHAWN HEINRICH; JILL HEINERT; RICK MACPHERSON; KEN NEDIMYER; AGGRESSOR

DO THE RIGHT THING

NOMINATE A SEA HERO TODAY AND HELP CHANGE THE UNDERWATER WORLD FOR THE BETTER

What is a Sea Hero, anyway? Each year for nearly five years, *Scuba Diving* readers have nominated divers who are making significant action-oriented contributions to marine conservation for our Sea Heroes awards. Oris Watches USA sponsors the awards and presents an Oris Aquis Date watch to five Sea Heroes each year, selected from your nominees. At the end of the year, a panel of *Scuba Diving* editors selects from among those five the Sea Hero of the Year, who receives a \$5,000 cash prize from Oris Watches USA to further his or her ocean conservation efforts. How have those Oris cash awards supported the work of our Sea Heroes from 2011 through 2014? Read below — and then go to scubadiving.com/seaheroes to nominate your 2015 Sea Hero today.



SHAWN HEINRICHS

FILMMAKER, ACTIVIST
Blue Sphere Media

MAKING A DIFFERENCE

Heinrichs' 2011 Sea Hero of the Year grant was leveraged fourfold through matching grants, enabling the purchase of a full-time patrol boat in Misool, Raja Ampat, in Indonesia. In 2014 he helped to bring about the establishment of Indonesia as the world's largest manta sanctuary; contributed to two recently completed film projects, *Racing Extinction* and *Guardians of Raja Ampat*; and debuted his *Tigress Shark* short film that helped persuade the Australian government to rescind a shark-cull program.



JILL HEINERTH

CAVE DIVER, FILMMAKER
wearewaterproject.com

MAKING A DIFFERENCE

The 2012 Sea Hero of the Year has traveled the world reaching out to people about her *We Are Water* Project in classrooms, churches and clubhouses. "The Sea Hero support has been a great help to help me reach out to others about water literacy," says Heinerth, honored this year by the Royal Canadian Geographical Society. Along with Jane Goodall, the Dalai Lama and Stephen Hawking, she contributed a message about protecting water resources for future generations to the new book, *Global Chorus*.



RICK MACPHERSON

ORGANIZER, ACTIVIST
Pelagia Consulting

MAKING A DIFFERENCE

Our 2013 Sea Hero of the Year spent 2014 working with many island nations around the Caribbean to help demonstrate how investments in shark protection are also insurance policies on coral-reef health, citing compelling science that is beginning to demonstrate how apex reef predators like sharks can have a mitigating effect on reef health. "Decision-makers might not immediately see the value of sharks, but they can clearly understand how their economies benefit from coral-reef tourism," MacPherson says.



KEN NEDIMYER

FOUNDER
Coral Restoration Foundation

MAKING A DIFFERENCE

After receiving his Sea Hero of the Year award at the 2014 DEMA Show, Nedimyer almost immediately returned to the field in Bonaire, where more than 1,300 nursery-raised staghorn and elkhorn corals were planted, and a new nursery installed. The program Nedimyer initiated is focused on engaging dive shops and resorts throughout Bonaire to join reef-restoration efforts by planting the right corals in the right places. He plans to travel to Jamaica and Mustique to set up nurseries there early this year.



ENTER NOW FOR A CHANCE TO **WIN TRIPS OR 1,000 BIG ONES!**

Scuba Diving's 11th annual "Through Your Lens" photo contest is open for business, and we've made some improvements. We've added new categories, for compact-camera shooters and a "conceptual" category for you Photoshop fiends, but kept the same amazing package of prizes you aspire to: exotic liveaboard trips from Aggressor and Dancer Fleet; top gear from manufacturers like Mares and Scubapro; imaging equipment and gift certificates from SeaLife and Backscatter — oh, and that \$1,000 in cold hard cash. Enter your best images of the year by **May 31** at scubadiving.com/photocontest.



**PRIZES
& CASH**

CURRENTS

FIRST LOOK

SCUBALAB PRESENTS
WHAT'S NEW IN
DIVE GEAR
BY ROGER ROY

1 SUBGEAR GOPRO MOUNT

This handy clip lets you attach your GoPro directly to your mask for a "here's what I saw video" of your dive. It fits most SubGear and Scubapro dual-lens masks, as well as other manufacturers' masks.

CONTACT: SUBGEAR.COM
MSRP: ABOUT \$14

2 ZEAGLE F8

The latest flagship reg from Zeagle has a new look and a lightweight second stage. Performance goodies include a zirconium-plated inlet tube, seat-saving orifice and a more responsive diaphragm.

CONTACT: ZEAGLE.COM
MSRP: \$599

3 DIVE RITE LX20 HAND-HELD PRIMARY LIGHT

With canister-light power in a hand-held design, the LX20 has a concentrated 6-degree beam and three power modes. It's depth-rated to 500 feet.

CONTACT: DIVERITE.COM
MSRP: \$750

4 SP GADGETS POV LIGHT

This 300-lumen, wide-angle LED light is waterproof to 130 feet, and has mounts for Go-Pro and accessories. It has four power levels plus two flashing modes.

CONTACT: SP-GADGETS.COM
MSRP: \$99

5 ANALOX 02EII PRO

This new adapter lets you check nitrox levels at the tank valve or by connecting to a BC's low-pressure hose. It's simple to calibrate and has an easy-to-read digital display.

CONTACT: ANALOXSEN
SORTECHNOLOGY.COM
MSRP: \$296



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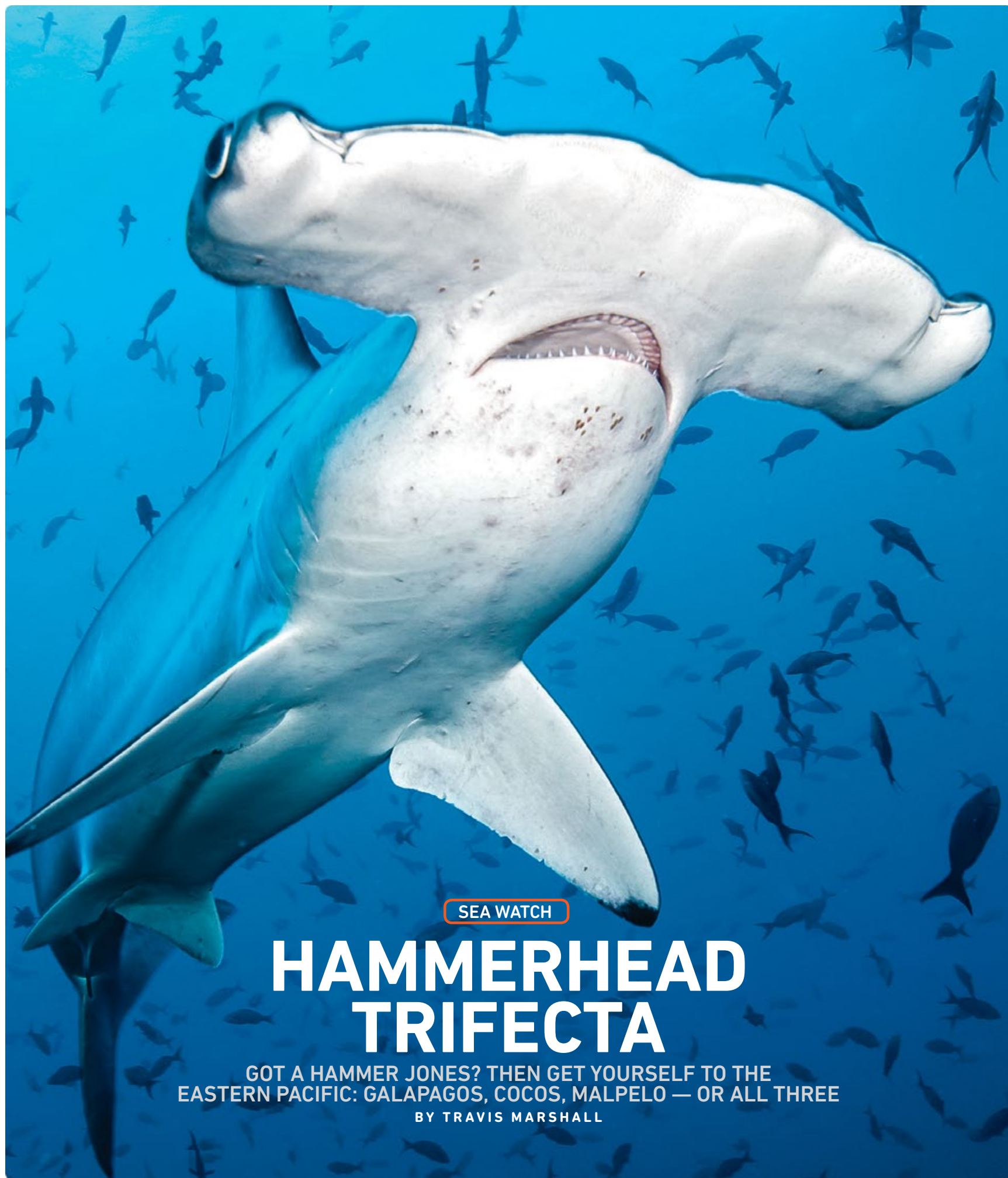
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ENCOUNTERS



SEA WATCH

HAMMERHEAD TRIFECTA

GOT A HAMMER JONES? THEN GET YOURSELF TO THE
EASTERN PACIFIC: GALAPAGOS, COCOS, MALPELO — OR ALL THREE

BY TRAVIS MARSHALL

ALLISON VITSKY SALLMON

Few sharks are as easily recognizable as the hammerhead, with its tall dorsal fin and wide, scythelike head slicing through the ocean as the muscles ripple down its sleek, gray body. It's a wide-roaming species that can be spotted around the world, but if you're game for the ultimate hammerhead encounter, look to the eastern Pacific, where a trio of locations — Galapagos, Cocos and Malpelo — form what in-the-know divers call the "hammerhead trifecta."

GALAPAGOS ISLANDS

In this volcanic archipelago, liveaboards take you way off the standard nature-watching routes to hammerhead country around the remote seamounts of Wolf and Darwin islands. Hit



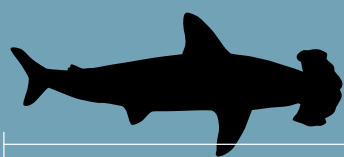
the water here and descend along the vertical rock face, keeping your head turned to the blue. While big, these sharks are shy — you'll often spot them swimming endless circles around the seamounts, hanging right on the edge of your visibility. You can swim with the hammers year-round, but December through May offers the best chance to see them schooling in the thousands.

COCOS ISLAND

Take a liveboard from Costa Rica's Pacific coast to the Cocos Island National Park, and you can dive

all day, every day with schooling hammerheads, not to mention a half-dozen other shark species, and gamefish like marlin and tuna. Legendary dive sites like Bajo Alcyone, Dirty Rock and Punta Maria are

FAST FACTS



UP TO 13 FEET

MAX WEIGHT
1,000 LB.

LIFE SPAN
20 TO 30 YEARS

STATUS
SEVEN OF THE NINE
HAMMERHEAD SPECIES ARE
LISTED ON THE IUCN RED LIST,
AND THE GREAT AND SCAL-
LOPED HAMMERHEADS ARE
BOTH LISTED AS ENDANGERED.

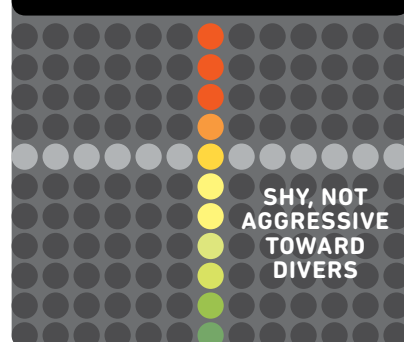


hammerhead cleaning stations, where you descend to about 100 feet and tuck behind a boulder to escape the ripping currents, and watch the hammerhead show unfold above your head.

MALPELO ISLAND

This tiny seamount off the coast of Colombia but accessible via Costa Rica is often considered a sister island to Cocos, and many live-aboard trips include both islands. Unlike Cocos, where the hammerhead dives are deep, you can spot huge congregations of these incredible sharks in shallow water — though blistering currents are still the norm. Hammerheads tend to hang above the thermocline, where they sometimes mix with equally large schools of silky sharks, creating superschools of can't-miss shark action.

DANGER INDEX





SECRET SPOT

VAD LAKE

Tucked away in Russia's Nizhny Novgorod region is the otherworldly Vad Lake. For hundreds of years the lake, which is about 325 miles east of Moscow, was fed by two springs. One of the springs has collapsed, creating an immense sink-hole more than 150 feet down. The pressure of water from the remaining spring is so strong that it creates a convex lens above the surface of the lake. In the summer, this surface layer can be warm and murky, but a 33-foot descent reveals water so transparent, it seems as if you're flying over land. To increase this sensation, I gave the diver brightly colored balloons to carry as he hovered above the blanket of green algae.

TEXT AND PHOTOGRAPHY
BY VIKTOR LYAGUSHKIN



SECRET SPOT

TAIYO SHIPWRECK

On its maiden voyage, this 300-foot fishing boat ran aground after striking a coral reef in Nono Lagoon, Solomon Islands. An attempt to salvage the ship went awry, and caused the *Taiyo* to sink vertically over the reef edge. Its bow sits just a few feet below the lagoon's surface, and the ship remains fully intact.

TEXT AND PHOTOGRAPHY
BY LIZ HARLIN



PUFFED UP

DO PUFFERFISH HOLD THEIR BREATH?

BY PATRICIA WUEST

They can look like heavyweight boxers in a display of you-can't-beat-me chest swelling. But it turns out, pufferfish — which can inflate to four times their size when threatened — do not hold their breath.

"We were intrigued by previous studies that suggested the pufferfishes hold their breath while inflated, presumably to keep the ingested water in the stomach," said Georgia McGee, who did the research while at James Cook University in Queensland, Australia.

As reported by *Live Science*, McGee says that "the fish breathe with their gills when puffed up, which means they can breathe as they always do, even when they inflate to the size of a football."

All of the energy expended by the puffer when it balloons



likely leaves it in a vulnerable state, because its metabolic levels are depleted. The pufferfish — also called blowfish, and known for its deadly poison — may be an easier target for predators after it deflates, which is why divers should never initiate the "puff," no matter how tempting it may be.

"It is kind of like a human athletics race; once we have finished the race, we need some time to recover before we can perform to the same level again," McGee said.

SHUTTERSTOCK. ILLUSTRATION: STEVEN P. HUGHES



WHAT IT'S LIKE

TO BE A SATURATION DIVER

BY MARNI ZABARSKY, AS TOLD TO BROOKE MORTON

I was 24 and living in Vieques, Puerto Rico, when I overheard Navy divers in a bar talking about \$100,000-a-year incomes. I had no idea what commercial diving was, but I went ahead and signed up for a course with Ocean Corporation.

On day one, the school owner gave a speech: "You are going to be cold, wet and tired, traveling hours to get to work. Some of you will last five minutes. Some will be lifers." I thought, *What the hell have I gotten myself into?*

But I stayed, finding my way into saturation diving. That's where the money is. The deepest site I've clocked in at was 450 feet, which means living for 30 days in a sat chamber at roughly 430 feet.

I lasted 14 years in this business because there was nothing I wouldn't knock myself out to get done. I'm 5-foot-3 and 125 pounds, so, yeah, there are tricks involved. We

breathe a helium-oxygen mix, so most of the time, everyone sounds like Mickey Mouse on the radio. I learned to talk slowly and deeply — I call it putting on my "man voice." I've tied air-filled milk jugs to impact wrenches to offset the weight. I also learned that you tie a rope to that same wrench because, guess what happens if you let go?

As for living at depth, no, I can't tell you most of those stories on the record. One prank I can share: I let the air out of a supervisor's car tires at the docks after he filled my toolbox with minnows on a job. But that was in good fun. For the most part, you keep

your cool. Because, man, did it feel good to work alongside these guys, earning their respect. Never in a million years did I think I would be a lifer, and I'm still here.

DIVE DEEPER

for more info, go to scubadiving.com/oceancorp

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You want a knife that is sharp, strong and resistant to corrosion. We evaluated new knives in a variety of designs, materials and sizes so you'd know how they stand up to the rigors of dive use. **BY ROGER ROY PHOTOGRAPHY BY MICHAEL KRAUS**



**BEEFY
DESIGN
FOR HEAVY
USE**

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**STAINLESS
BLADE
HOLDS AN
EDGE**

We evaluated each knife's ability to cut several types of line: ¼-inch diamond braid nylon-poly, ¼-inch hollow-braid poly, ½-inch braided nylon and heavy (.095-inch) plastic trimmer line. While we could have used tougher lines (such as Kevlar), we chose the lines *(continued)*



CRESSI BORG

The Borg looks like a big knife. But pick it up and you'll realize it's actually a *really* big knife — 10.5 inches long, with the longest cutting edge of any knife we tested (5.5 inches). It's heavily built, with a $\frac{3}{16}$ -inch-thick blade and a hammer pommel. All those beefy dimensions make the Borg robust enough to take in stride any abuse, from prying off hubcaps to crushing oysters. The stainless blade also cuts pretty well, breezing through our line tests while hesitating only on double cuts of heavy mono; it maintained a decent edge, even after many cuts. The hard-plastic sheath does a good job securing all this knife, releasing with a press of the lock, though you'll need a longish calf to strap it onto. **\$49.95; available with sharp or blunt tip; cressiusa.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



MARES FORCE PLUS

The Force Plus has a handle with a bit of flair at the end that works with the rubbery thumb stop to provide a comfortable, secure grip. Made of coated stainless, the Force Plus has a drop-point blade with a cutting edge nearly 4 inches long that's mostly serrated, with a smooth section near the tip. The aggressive serrations sawed through heavier lines well, but the blade, while very sharp, had trouble with heavy monofilament, which tended to bounce over the serrations. The sheath is excellent, with a smooth-operating, secure lock and a streamlined, nonsnagging profile. While the knife and sheath together are more than 9.5 inches long, the BC mount worked really well, keeping the knife out of the way but still within easy reach. **\$65; mares.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



OTHER GREAT CUTTERS TO CONSIDER



Mares Force Nano Plus
\$65
mares.com

Only 6.5 inches long, it has a PVD-coated stainless blade that cut pretty well considering it's less than 2.5 inches long. The line cutter was effective for monofilament, but it requires care when making hard cuts. The grip is good, and the BC mounts are excellent.



XS Scuba Rook
\$48
xsscuba.com

The grip on the Rook is comfortable for such a small knife (a hair over 6 inches), and the sheath is secure and easy to release. Made of 304 stainless, this is a rugged, all-around tool that can stand even some sawing or prying, though it needs careful rinsing and oiling to keep corrosion at bay.

and followed that with more cuts of hand-held loops (since you're not likely to find a cutting board when diving). We also scored each knife on the following: the security of its sheath or folding/locking mechanism; the ease of deploying/stowing the knife barehanded and with 5 mm gloves; how it withstood 10 pounds of weight when wedged 1-inch deep in a block of wood; and its overall fit and finish.

UK

BLUE TANG TITANIUM DROP POINT

Underwater Kinetics offers its Blue Tang with sharp or blunt tip, as well as in titanium or Hydralloy (a proprietary material that UK says has the strength of 420 stainless with corrosion resistance of 316 stainless; we soaked one in salt water for four days without any sign of corrosion). The pommel unscrews to disassemble the knife without any need for tools, the handle offers an excellent grip, and the sheath does its job well but can be a little tricky to unlock with bulky gloves. It sometimes needed two passes to cut our heavy plastic line, but it whizzed through all the other test lines, and kept an edge after many cuts. **\$121.99; Hydralloy steel version \$58.99; uwkinetics.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



HANDLE
REMOVABLE
WITHOUT
TOOLS

BLADE
WHIZZED
THROUGH
TEST LINES

XS SCUBA

FOGCUTTER X

Looking something like a genetic experiment with a dive knife and a pair of garden shears, the Fogcutter X does a lot of stuff, some of it very well. Closed, it looks like a traditional dive knife, but unlocked the handle and blade split into a pair of shears that will make short work of just about anything you can fit inside its jaws. It performed well as a knife but even better as shears; the only downside is that when you're snipping there are lots of sharp edges moving around — you'd have a hard time safely using the shears close to stuff you didn't want cut — and the 420 stainless requires thorough rinsing and lubricating after use. But this is a very capable all-around tool. **\$85; xsscuba.com**

CORROSION RESISTANCE

POOR

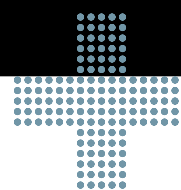
EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



OTHER GREAT CUTTERS TO CONSIDER

LARGE



Cressi Victory
\$54.95

cressiusa.com
With its thick blade of diamond-coated 420 stainless, the 9.4-inch Victory can take lots of abuse. The blade cut well and held a decent edge after many repetitive cuts. The plastic/rubber handle has wide guards, and the push-lock sheath worked very well.

LARGE



Mares Iago
\$65

mares.com
The Iago's needle-point blade would no doubt make short work of a speared fish, but it worked pretty hard getting through the lines we tested. The handle is very comfortable and rock solid, with a curved base that's a soft rubbery material that falls naturally into your hand.



OTHER GREAT CUTTERS TO CONSIDER

BC/POCKET



Underwater Kinetics Fusilier
Hydralloy Blunt Tip
\$65.99

uwkinetics.com
At 7.9 inches, the Fusilier is between the Blue Tang and Remora, but it shares features with both. The handle is removable without tools and has no metal-to-metal contact, and the blade performed very well.

BC/POCKET



Seac Sub Rip Tek
\$97

seacsub.com
One of several Seac models that differs only in blade shape, the Rip Tek has a straight-back stainless blade with a 3-inch cutting surface that, as with the Rip Race, made short work of our test lines. Like its drop-point brother, the Rip Tek has a thick, stout blade and a handle that's removable for cleaning.

CRESSI

ALLIGATOR KNIFE AND SCISSORS

Just 6.5 inches long overall, this combination knife/scissors tool is small enough to attach unobtrusively on a BC hose or straps (mounts are included for both). When closed, the blade has a conventional profile, with a 3-inch smooth edge and a serrated section on the back. Unlock the handle, and the blade splits into spring-loaded scissors that will chop through pretty much anything you can get them around. The handle is only 3 inches long, but the rubber insets and the wide guards provide a firm grip, keeping your fingers away from the sharp working parts. The sheath keeps it securely in place, and unlocks easily, even with gloves. The 420 stainless steel holds an edge well, but it will require thorough rinsing and oiling to stay shiny. **\$74.95; cressiusa.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



SEAC SUB

RIP RACE

With its steep, bright, drop-point blade, the Rip Race is one of two Seac knives we tested (read the review of the Rip Tek in "Other Great Cutters to Consider" on this page). Aside from blade configuration, the knives are virtually identical — shaped from thick stainless with a 3-inch edge that was a top performer in all cutting tests, and a composite handle that unscrews (with the included Allen wrench) for cleaning. The grip shape is excellent, and the thumb and forefinger grooves are perfect with gloves, though a little aggressive when barehanded. The sheath has good BC mounts and a very secure thumb release, but the knife fits in the sheath in only one direction, making left-handed operation a little tricky. **\$97; seacsub.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



BEST BLADE DESIGN

How you'll actually use your knife or cutting tool is what determines the best design for you. If you're carrying it for emergency use to clear away entanglements like fishing line, a very compact cutting tool that stows out of the way might be the best option. But if you need a tool for heavy cutting, sawing or prying, you need a really rugged knife with

UK

REMORA TITANIUM BLUNT TIP

The deeply serrated edge of the Remora is less than 2.5 inches long, but it cut like a demon through all the materials we tested. As you'd expect for such a small knife — only 6.5 inches overall — the handle is also on the small side, and the grip is decidedly better barehanded. The ⅞-inch-thick blade will take a lot of abuse and prying, and the rounded tip lets it slip in for delicate cuts. The inserts pop out of the handle to remove the blade for cleaning, and the friction-lock sheath is compact and includes excellent BC mounts for hose or strap. The Remora in Hydralloy steel was also one of our top performers. The Remora Titanium is our Testers Choice in the BC/pocket knives category. **\$113.99; Hydralloy stainless \$52.99; uwkinetics.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



XS SCUBA

MINI FOGCUTTER

The little brother to the Fogcutter X, the Mini Fogcutter also bears a family resemblance to the Cressi Alligator and Scissors, but with a blunted blade tip. Whether using it as a knife or scissors, the Mini Fogcutter sliced quickly through everything we put it up against. It shares the pros and cons of the other tools of this design we tested — the versatility to slice, cut, chop, saw and grip, and the need for caution with all the sharp parts levering around while doing it. The sheath has an excellent lock and release, and very good BC mounts, and the grip and handle lock are very good. Made of 420 stainless steel, the blades hold an edge but are subject to corrosion unless well rinsed and oiled. **\$75; xsscuba.com**

CORROSION RESISTANCE

POOR

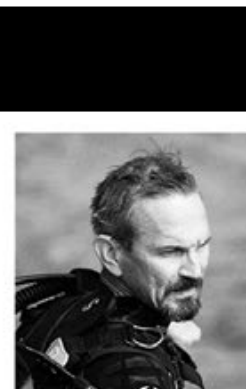
EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



Pay careful attention to regular maintenance of your knife. If you ever need it to free yourself or your buddy, you'll be glad it's sharp and corrosion-free. — Roger Roy, ScubaLab Director

a thick, tough blade and a secure grip. And if you'll be using your knife for spearfishing as well as general diving, you need a blade that can cut well but also quickly dispatch a speared fish, and it's handy if it has tools for repairing or freeing spear points. Also be sure that the knife's grip fits your hand properly (including with any gloves you dive with).

Fighting Rust

Today's dive knives resist rust far better than those of just a few years ago. Titanium and some specialized steel alloys are practically immune to corrosion, and even less-resistant steels can last a long time with proper care.



First, rinse the knife and sheath thoroughly as soon as possible after use, being sure to remove any accumulated salt beneath the handle or hardware. If the knife handle is removable, pull it off for cleaning.



Next, dry the knife completely, rubbing the blade and metal parts with a soft cloth to buff away any signs of corrosion or stain.



Finally, spray the blade with a very light coat of silicone lubricant (don't use petroleum oil), and store it in its sheath.

SCUBAPRO X-CUT TITANIUM

Made from a single block of titanium, the X-Cut is just 5.6 inches in length and 1/8-inch thick. But it has a big bite, with the 2.5-inch blade cutting with surprising ease through everything from heavy plastic line to braided nylon. The blade's design — slightly curved with serrated and smooth edges — makes the most of a short cutting surface. The handle is none too big and a little hard on bare hands for difficult cuts, but the forefinger guard and grooved thumb grip help maintain a steady hold. The soft sheath (with a belt loop) makes the most of the X-Cut's compact size (the hook-and-loop locking tab must be closed carefully to keep the knife securely in place). The X-Cut Titanium was our Testers Choice in the compact-knife category. **\$80; scubapro.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



SLIGHTLY CURVED WITH A SERRATED/SMOOTH EDGE

MARES HERO

For a knife just a hair over 5 inches, the Hero sliced through even our thickest lines with only an occasional second pass for heavy plastic line. Made of coated 440A stainless known more for corrosion resistance than edge holding, the spear-point blade held its edge through many repetitive cuts. The all-metal design (with holes for straightening and freeing spear heads) means there's no handle or hardware for salt to hide under. The short handle makes the grip tricky for really hard cuts, but it's shaped and grooved to make the best of its small size. The Hero secures with a tabbed O-ring to the soft sheath, which has two belt loops, and comes with elastic bands for mounting to your calf or arm. **\$40; mares.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



HOLES FOR STRAIGHTENING AND FREEING SPEAR HEADS

DIVE RITE LINE CUTTER

The least knifelike tool we tested, the Line Cutter turned out to be one of our favorites. Stowed in its sheath (with excellent mounts), it's secure and out of the way, but it deploys with a yank of the strap handle. The blade guard makes it almost impossible to cut anything unintentionally. But when you mean to, the replaceable blade of 420 surgical stainless made short work of even doubled heavy plastic line. It cut with ease through everything we could fit into its jaws, up to about 3/8-inch, which is really its only limitation. You won't cut 3/4-inch line with it, or do any sawing or prying. But it does what it does with near perfection. The Dive Rite Line Cutter is our compact-knife Best Buy. **\$24; diverite.com**

CORROSION RESISTANCE

POOR

EXCELLENT



CUTTING ABILITY

POOR

EXCELLENT



REPLACEABLE BLADE OF 420 SURGICAL STAINLESS

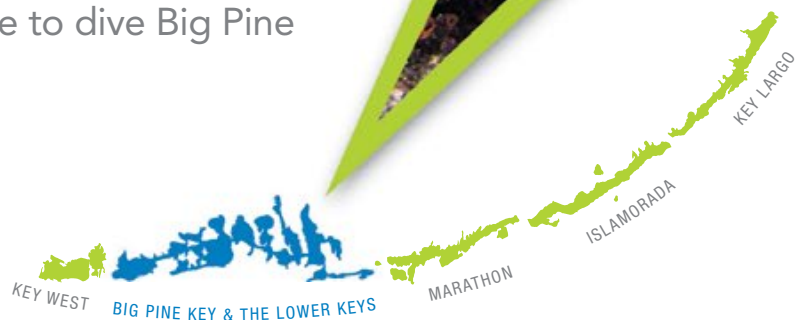


Unattached and Available.

With everything from famed Looe Key Reef and the upright 210' freighter Adolphus Busch to more than 150 species of fish and 50 different kinds of coral, it's time to make a date to dive Big Pine Key and Florida's Lower Keys.

fla-keys.com/lowerkeys 1.800.872.3722

BigPineKey
and Florida's Lower Keys



ARCHIP



Just the sound of that evocative word sets our tribe dreaming passes that beg for a drift dive. These jewellike clusters link for divers, all archipelagos are not created equal. Follow our lea

01

The waters of the Galapagos Islands teem with sharks and endemics like the Galapagos sea lion.



ELAGOS

of coastlines skirted with reefs and cut through with thrilling
ed by a watery chain are strung out all over the planet. But
d to nine of the most awe-inspiring of the bunch. By Terry Ward



02

Indonesia's Cendera-
wasih Bay offers
encounters with the
biggest fish in the sea
— whale sharks.

FROM LEFT: MARK HARDING/AGEFOTOSTOCK; TIM ROCK

MUST DIVES

1. Galapagos, Gordon Rocks The top of a volcanic cone, this site off Santa Cruz is a place for divers with a logbook crammed with dives. You'll deal with high-velocity current and surge, but you're almost guaranteed hammerhead encounters. **2. Indonesia, White Arrow** This zippy drift in Raja



CHRIS GUG

Ampat's Aljui Bay has you flying down a wall dotted with amazing macro — if you can slow down long enough to see 'em — that can end in a small (but fun!) whirlpool. **3. Florida Keys, Wrecks of Largo** Ask a Florida diver for the most advanced Keys dive, and you'll get one answer: the wrecks around Key Largo. *Duane* and *Bibb* are touted for currents and depth, and the monster *Spiegel Grove* for sheer awe. **4. Azores, Condor Seamount** Ten miles off Faial is Condor Seamount, one of the best places to dive with blue and mako sharks, and a favorite of many underwater photographers. >>



03

Barracudas hover above the USCGC *Duane*, one of many dive sites along the Florida Keys' Wreck Trek.

01 GALAPAGOS

SANTA CRUZ TO DARWIN TO WOLF

There you are, diving in a tropical destination, enjoying the short-suit freedom of it all, and guaranteed someone's going to shatter your balmy reverie with tales of the all-the-more-epic cold-water diving in the Galapagos Islands. Dives in the place Darwin made famous are fodder for the best bucket lists. And if there's one archipelago where it's worth layering on the rubber to get in the water, it's here. Off the southeast coast of Darwin Island and accessible only by liveaboard is Darwin's Arch, which is often referred to as the best dive in the world. If big animals thrill you, prepare for sensory overload — schooling hammerheads, whale sharks, veritable bottlenecks of sea turtles, and even tiger sharks can easily be spotted on a single dive here. On both Darwin and Wolf Island you can expect to see mesmerizing Galapagos sharks gliding through the crystal-clear water. If pinnipeds are what you're searching for, Gordon Rocks is the place to be. Frolic with cheeky Galapagos sea lions and fur seals that often zoom in close to your mask for a better view. Then, of course, there are the lunar topside landscapes of the archipelago to inspire your awe, along with resident marine iguanas, giant tortoises and blue-footed boobies. You can pinch yourself, but you're not dreaming. Diving in the Galapagos Islands is pure magic from every angle. **GO NOW Dive Center Academy Bay; academybaydiving.com**

02 INDONESIA

SULAWESI TO RAJA AMPAT

Imagine an area the size of Australia, with only a fifth of it covered by land, and the rest awash with beautiful blue ocean and dazzling coral gardens. Indonesia, the world's largest archipelago, boggles the mind with over 17,000 islands strung across 3,000 miles. For divers, the blockbuster destinations are almost too many to name. Most epic among them is Raja Ampat, far east in the archipelago, at the bull's-eye of both the Coral Triangle and the world's marine biodiversity. "Over the course of 24 hours at Misool, we dived with manta rays, pygmy seahorses and barracudas," remembers German dive writer Astrid Daerr from a recent liveaboard trip to Raja. "We saw dolphins and the blows of whales too." At West Papua's Cenderawasih Bay, whale sharks wait just below the surface to dine on fish left behind by local fishermen. The striking walls of anemones on Bunaken Island off North Sulawesi make for a heady contrast to the muck-diving paradise of Lembeh Strait, where things like mimic octopuses and bobbit worms rise from the black silty bottom. For diversity topside and below, there's no place like Indo. **GO NOW The Arenui Boutique Liveaboard; thearenui.com**

03 FLORIDA KEYS

KEY LARGO TO KEY WEST

The Wreck Trek stretches the length of the Keys; rainbow-colored coral wonderlands

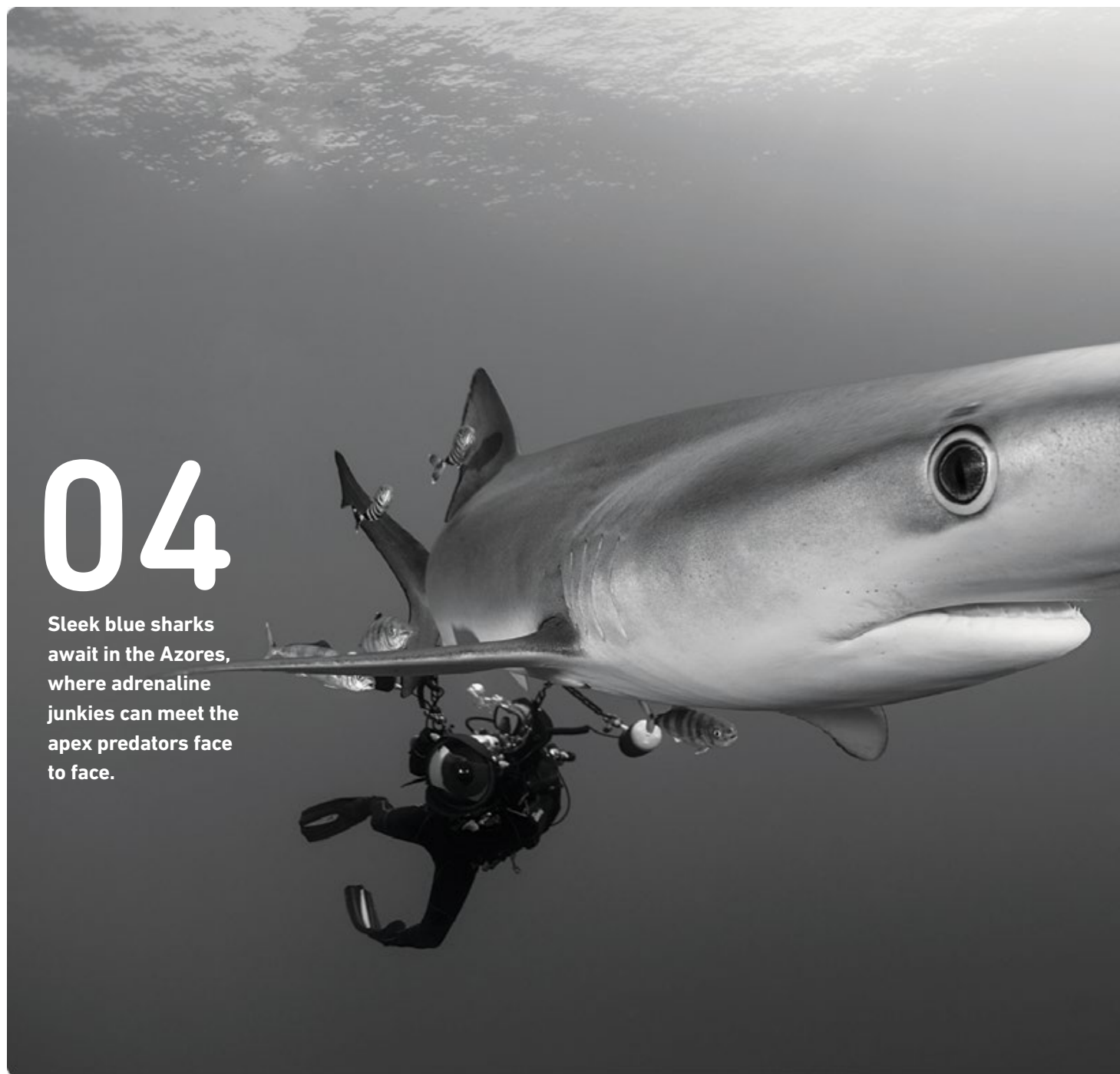
5. **Andaman Islands, Hin Daeng and Hin Muang** Located in the Southern Andaman Sea, these open-water pinnacles reach depths more than 150 feet and are rife with eye candy. Flying above canyons and plateaus you'll spot grouper, schooling barracuda and the seasonal whale shark.
6. **Philippines, Verde Island Drop-Off** Spanning depths of more than 230 feet, the coral-encrusted Drop-Off is a sensory overload, from massive tuna and barracuda hanging in the stiff current to a colorful tornado of schooling fish.
7. **Aruba, Jane Sea Wreck** You need to be comfortable with strong

like the one at John Pennekamp Coral Reef State Park pair with an island vibe to make the Florida Keys our favorite East Coast archipelago. Where that diversity of diving meets the sheer quirkiness of the Keys' top-side attractions, fun is bound to ensue. One morning you may find yourself swimming among schooling bar jack or spotting a passing goliath grouper on the 510-foot-long *Spiegel Grove* shipwreck, some 6 miles off Key Largo. The next day might find you hand-feeding tarpon at Robbie's Marina or frolicking at just 30 feet between spur-and-groove formations off Key West, scouting for sleeping nurse sharks and sea turtles among the sponges and fans. Night dives are stellar in these parts too, with beautiful basket starfish unfurling atop the reefs to magical effect. Your attention will likely be pulled back top-side as the day winds down, with sunset celebrations playing out everywhere from Mallory Square in Key West to roadside marina bars and tiki huts in the Middle and Upper Keys. **GO NOW Ocean Divers;** oceandivers.com

04 AZORES

FLORES TO PICO TO SAO MIGUEL

Divers who venture to the weather-beaten but otherworldly Azores — picture a landscape that mixes New Zealand and Hawaii with the architecture of old Europe, about 900 miles off the coast of Lisbon — will be rewarded for their own journey to the mid-Atlantic. "Anything goes, but nothing is guaranteed here," says underwater



04

Sleek blue sharks await in the Azores, where adrenaline junkies can meet the apex predators face to face.

photographer Daniel Brinckmann, who has made multiple journeys to the remote region to dive with Risso's dolphins, blue and mako sharks, and schooling mobula rays that call these waters home. Several deep seamounts like Princess Alice Bank and Condor Bank draw migratory species like loggerhead turtles, billfishes, and whales for stopovers on Gulf Stream journeys. Resident sperm whales — which require strict permits to dive with but can be spotted from dive boats — are the most legendary locals. **GO NOW Dive Azores;** diveazores.net

05 ANDAMAN ISLANDS

NORTH, MIDDLE, LITTLE AND SOUTH

This Bay of Bengal archipelago belongs to Myanmar and India, which lies 850 miles to the west, but the Andaman Islands are actually situated closer to the Thai coast — a cultural crossroads, in other words, that happens to intersect a diver's dream. Together with the neighboring islands of Nicobar, the Andamans count 572 islands among them; surrounding those islands are some of the

most pristine dive sites you can imagine in an area that's considered one of the sport's last tropical frontiers. You'll have to travel by liveaboard to reach dive sites around the black walls of Barren Island (South Asia's only active volcano), where you'll fin alongside graceful manta rays, whitetip reef sharks and banded sea snakes. The Andamans' southern islands of Cinque, Sisters and Passage are known for their bioluminescent waters, abundant sharks, and slopes covered with fans and sponges. For land-based diving, head to Havelock Island, a

currents to dive this 250-foot former concrete freighter in 90 feet of water. The cargo area is fairly open, but deeper penetration is only for certified wreck divers. **8. Tuamotu Archipelago, The Canyons** A blood-pumping drift dive sends you to this site inside of Rangiroa's Tupita Pass, where whitetip sharks and Napoleon wrasses glide in the current through the canyon's faults. **9. Turks and Caicos, G-Spot** Gorgeous deepwater gorgonians here led to this site's name, and there are a stunning array on the flanks of this sheer drop-off. Don't forget to look into the blue to spot sharks, turtles and eagle rays.



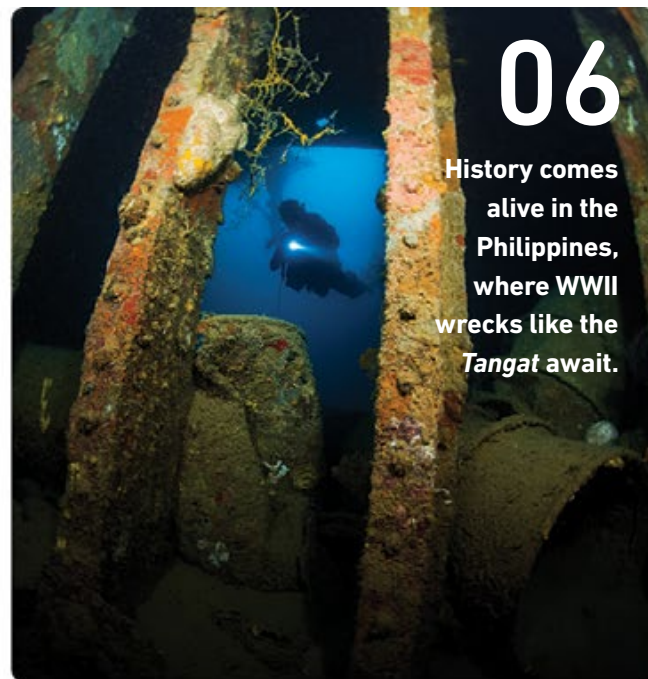
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Venomous sea snakes are not uncommon in the Andaman Islands.



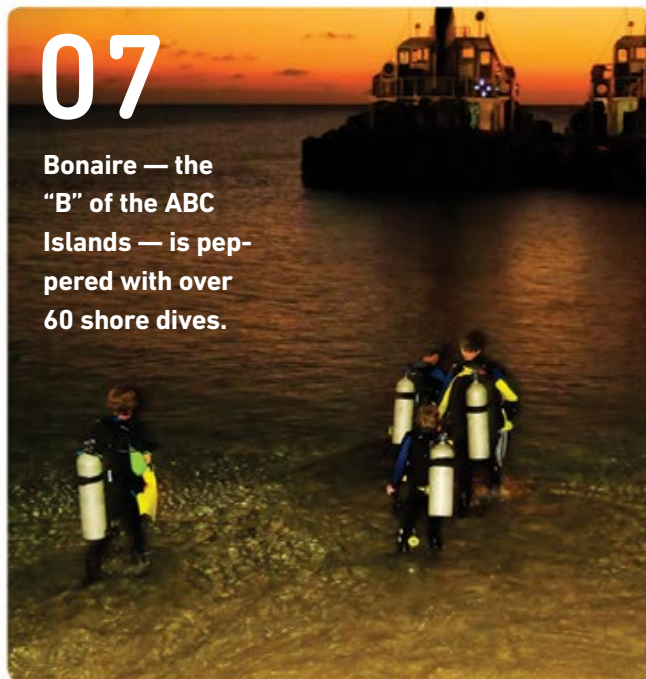
06

History comes alive in the Philippines, where WWII wrecks like the *Tangat* await.



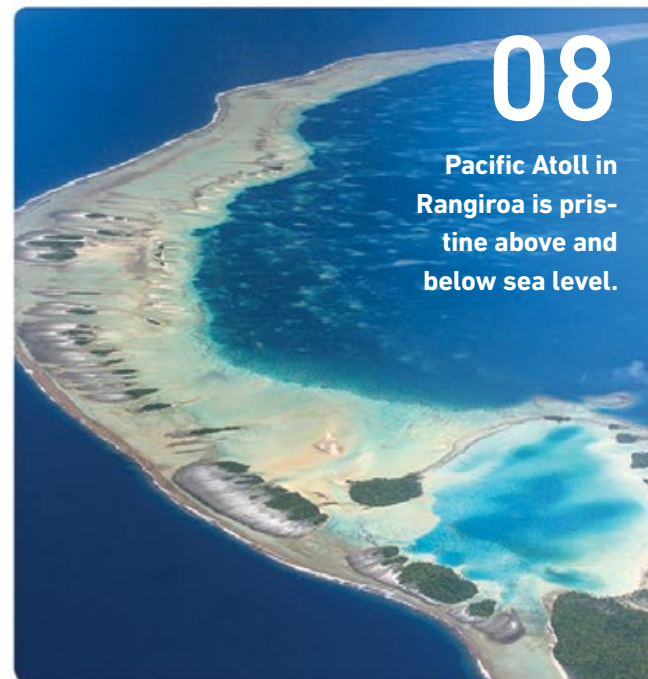
07

Bonaire — the “B” of the ABC Islands — is peppered with over 60 shore dives.



08

Pacific Atoll in Rangiroa is pristine above and below sea level.



tropical idyll that's a perfect base for day-trip dives to spot Napoleon wrasses, trippy nudibranchs, clouds of fusiliers and abundant sea turtles that define Indian Ocean diving at its apex. **GO NOW Barefoot Scuba; diveandamans.com**

06 PHILIPPINES

LUZON TO MALAPASCUA TO CORON AND BEYOND

Volcanic islands, coral islands, sponge-covered reefs, rocky pinnacles and sandy atolls — and that's just scratching the surface here.

You can fantasize about any kind of diving, and it's likely that the vast archipelago of the Philippines — with more than 7,100 islands plied by all manner of liveaboards and dotted with dive resorts — has an underwater wonderland to meet your dreams. Photography buffs in search of the South China Sea's wildest macro subjects make for Anilao on the island of Luzon to spot such oddities as painted frogfish, Spanish dancers and saw-blade shrimp. The incredible dive sites around Malapascua offer thrills of every shape and size, from thresher sharks

that can reach up to 12 feet in length to cheeky mandarinfish that flaunt their colors (and frustrate your macro lens with their shyness) once dusk begins to fall. Coron Bay, between Culion and Coron islands, draws wreck divers with its cache of Japanese ships like the *Tangat*, which sank here during World War II. And from December through May every year, whale sharks cruise the currents of Donsol, on Luzon, to gorge on plankton in the upwellings. It's a feast for the senses, in every sense of the word. **GO NOW Turtle Bay Dive Resort; turtlebaydiveresort.com**

07 ABC ISLANDS

ARUBA, BONAIRE AND CURAÇAO

Painted with a swirl of Spanish, Dutch, Portuguese and English influences, this string of three islands in the Dutch Caribbean — Aruba, Bonaire and Curaçao — lies below the hurricane belt in a reef-fringed zone rife with marine life. In Aruba, you can fin over the sponge-carpeted skeleton of the 400-foot *Antilla* cargo ship, where you'll encounter blue wrasses, schooling angelfish and

MORE ARCHIPELAGOS

St. Vincent and the Grenadines Macro fans love the Caribbean's "Critter Capital." Dives at Critter Corner regularly feature frogfish, flying gurnards and long-snout seahorses.

Bahamas If sharks are what you're looking for, the Bahamas delivers in spades — from the bulls and tigers of Bimini and the reef sharks of Nassau to blue-water dives to spot oceanic whitetips off Cat Island.

Maldives Archipelago diving often means thrilling drifts. Case in point: Kuredu Express, a Maldivian dive site on Lhaviyani Atoll that serves up eagle rays, tuna, mantas and more.

Hawaii Dive Oahu's favorite shipwreck, the *YO-257*, a 165-foot-long former Navy refueling vessel with plenty of options for penetration and strong current that brings in the big boys like tiger and Galapagos sharks.

Fiji Base in Kadavu to access the Great Astrolabe Reef, where sites like Eagle Rock dish up a rainbow of hard corals frequented by spotted eagle rays and Napoleon wrasse.

Norway Dive dry in the Lofoten Archipelago, just north of the Arctic Circle, to fin your way through kelp forests and among slack-jawed wolf eels and enormous anemones.

Japan A pyramid monolith that looks like Mayan ruins and rectangular rock formations at the "Japanese Atlantis" are among the bizarre sights at Yonaguni Island, the country's westernmost point.

New Zealand Hit the Poor Knights Islands to see subtropical coral gardens and spectacular underwater arches fluttering with orange and white nudibranchs and schools of blue maomaos.

Channel Islands The eight islands due west of Santa Barbara off the California coast are a kelp forest wonderland where you'll often spot angel and horn sharks.



Channel Islands



Hawaii YO-257



New Zealand

yellowtail snapper. One island to the east, in Curaçao, the water is as turquoise as the liqueur of the same name. There, dive sites like the *Superior Producer* shipwreck and Barracuda Point support resident sea turtles, jacks, and enormous barracuda prone to follow you as you dive. The best of the bunch for divers, however, is Bonaire. Abundant marine life and vibrant coral reefs abound at this iconic island, located farthest east in the archipelago. The entire shoreline is protected as part of the Bonaire National Marine Park, and you can access more than 60 excellent dive sites directly from the shore, no boat required. **GO NOW** **Buddy Dive Resort; buddydive.com**

08 TUAMOTU ARCHIPELAGO, FRENCH POLYNESIA

FAKARAVA TO RANGIROA

Many dive destinations can rightly claim to have sharks en masse, but few places put on quite the sharky show of the rip-roaring passages of the Tuamotus. This archipelago of more than 70 atolls that belong to French Polynesia is only about an eight-hour flight from Los Angeles (to its capital, Papeete), but the diving makes it seem like a whole different world. Atolls like Rangiroa and Fakarava are thin doughnuts of sand and coral reef, cut through with passages patrolled by thousands of gray

reef sharks. You'll spot it as soon as you dive in — a wall of sharks that stretches from the surface to far, far below the 80-foot-or-so range of your visibility. On a single dive in passages like Tetamanu (the legendary south pass in Fakarava) and Tiputa pass in Rangiroa you can easily see huge aggregations of gray sharks, a great hammerhead, manta rays and dolphins on a single tank. And when you rush into the lagoon at the end of the dive, carpets of colorful corals are awash with every manner of reef fish to make your segue back topside all the more bearable. **GO NOW** **Top Dive; topdive.com**

09 TURKS AND CAICOS

PROVIDENCIALES TO SALT CAY TO GRAND TURK

Together with the islands of the Bahamas, the Turks and Caicos are part of the Lucayan Archipelago, also known as the Bahamas Archipelago. It's a lot to rattle off in geography class, but what it really comes down to is this: colorful fringing reefs, plunging walls, and intoxicatingly blue water that's a window onto some potentially very, very big animals. Every year, from January through early April, Caribbean humpback whales migrate through the Turks Head passage on their way to the Silver Banks of the Dominican Republic, treating divers to one of the sport's most thrilling shows. Closer to Providenciales you can spend your days diving ledges decorated with elephant ear sponges, and sheer walls that vibrate with swaying fans and thousands of fish. From eagle rays and Caribbean reef sharks to abundant macro subjects, the marine life spans the spectrum in water so gin clear, you'll want to give it a lime twist. **GO NOW** **Aggressor and Dancer Fleet; aggressor.com**





09

From January through early April, humpback whales make a grand appearance as they migrate through the Turks and Caicos.

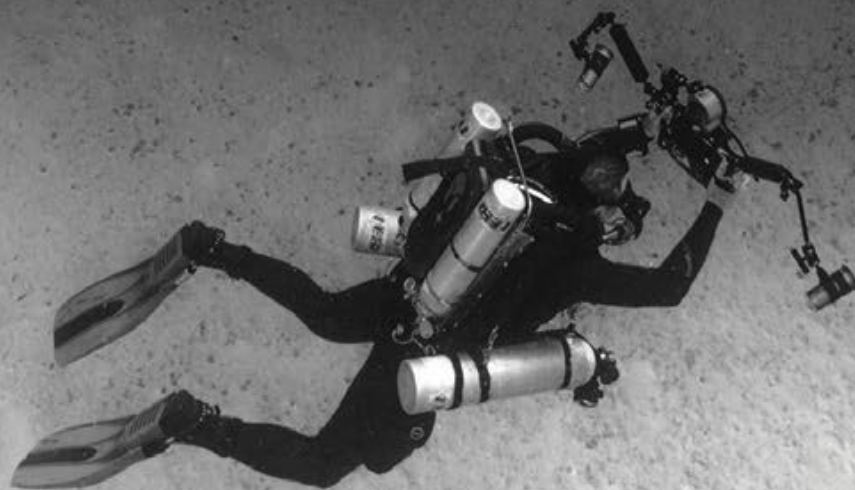


ADVANCED
ADVENTURE

**LEARNING THE WAY OF THE CLOSED-CIRCUIT REBREATHER
WILL FOREVER CHANGE THE WAY YOU ENJOY THE UNDERWATER WORLD**

REBREATHE EASY

BY ERIC MICHAEL PHOTOGRAPHY BY TANYA G. BURNETT

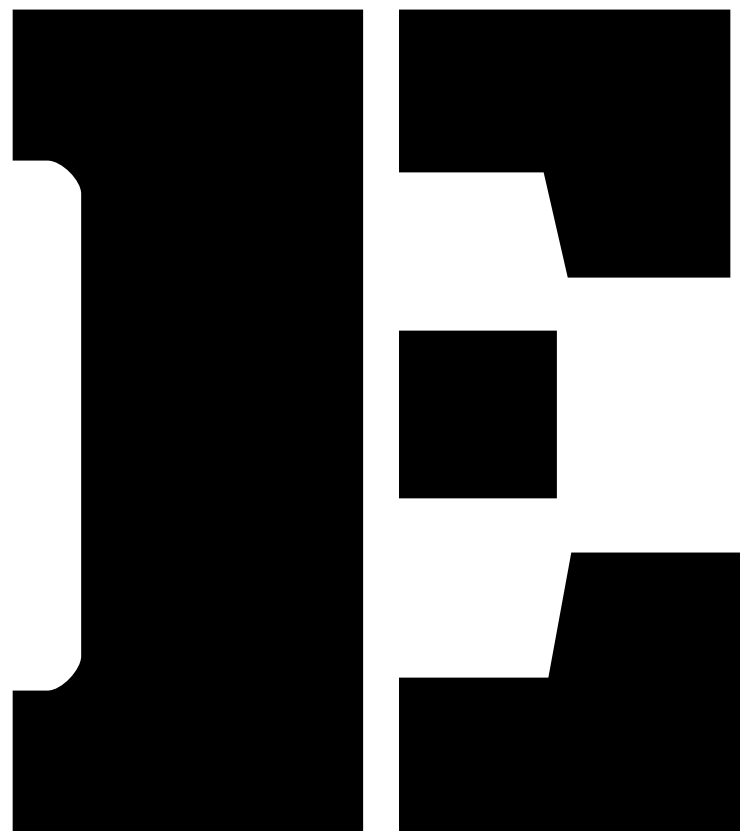




Doug Ebersole takes the closed-circuit plunge; opposite, a CCR diver explores the *Kittiwake*.

ADVANTAGES OF OWNING A REBREATHER

1. The Ultimate Mix The unit constantly monitors levels of oxygen and nitrogen in the breathing loop to create the safest balance and optimal PO₂ based on depth. **2. Take Your Time** Because divers



everything has changed.

With a single anxious breath, nearly a decade of carefully cultivated muscle memory is dashed, replaced by an entirely new perspective on diving. Seconds before, a reflexive, shallow draw on the mouthpiece should have delivered a blast of cold, compressed air – instead, nothing. Fighting a panicked urge to bolt for the surface, I paused to collect myself, and remembered the words of my instructor: “Pull hard, and trust the unit.” On the second, more-forceful attempt, I hear the regulator fire behind my right ear, and a flow of warm, moist gas satisfies my lungs’ hunger for oxygen. As the breathing loop fills to match the natural capacity of my lungs, I take a moment to acclimate as my heart rate slows. That’s when I begin to appreciate one of the biggest benefits a rebreather brings to diving: quiet. The other important advantages of closed-circuit systems will be revealed during this first checkout dive of my KISS Spirit LTE mCCR certification

course. Four feet below the surface on a sunny Grand Cayman sand flat, I’m learning that mastering the KISS requires an open mind and a faith in physics.

I used to envy rebreather divers. Not only did their gear look exponentially more badass than mine, they also were conspicuously absent during surface intervals, climbing back on board about when the rest of us had finished our

second tank. From these strangers I learned the benefits: a blissful lack of bubbles, mind-expanding bottom times and a nearly endless supply of warm, moist air. Yet there were always reasons that kept me from converting – too expensive, too complicated, too risky. As the technology evolved and a new breed of recreational rebreathers emerged, my opinion began to shift. Try-out dives in pools at DEMA and PADI demonstration events continued to tip the scale. When the opportunity arose to get certified on a KISS CCR during an annual gathering

of closed-circuit enthusiasts and photographers called Focus, at Grand Cayman’s Cobalt Coast Resort, I didn’t hesitate. I knew that on-site operator Divetech has catered to rebreather divers for years, and that many of its staff are vocal devotees. Plus, the island’s walls offer optimal conditions for this type of diving. It seemed like the perfect immersive training mission.

My instructor, Doug Ebersole, a cardiologist and CCR evangelist from Lakeland, Florida, greets me with a warm handshake and a cryptic message: “Your life’s about to change.” During the next three days I’ll master assembly, cleaning, testing and troubleshooting of the unit on dry land. Class sessions will help me understand the physiology of rebreather diving, along with the advanced nitrox theory required to operate one. Then we’ll make six dives, for a minimum of 500 minutes underwater, during which I’ll perform the skills needed to handle any emergency situation that might occur. (That’s right, six dives for 500 minutes – do the math.)

After a thorough tour, I discover it’s far less complicated than I expected – but a great deal more involved than screwing on a first stage. From a pile of parts, it takes me about 10 minutes to assemble, with a very necessary checklist but no tools. Designed (continued on page 54)



Grand Cayman operator Divetech caters to rebreather divers; the island’s walls and wrecks are perfect for CCR diving.

are breathing an optimized gas mix, the body absorbs far less nitrogen, allowing for dives longer than two hours at recreational depths. (Safety stops still apply.) **3. Easy Breathing** Gas that is warmed

and moistened by the lungs is recycled through the loop, unlike on open circuit, where divers inhale cold, dry gas with each breath, which increases fatigue. **4. Silent Running** Without the ruckus of

bubbles to frighten off marine life, your chances for life-altering close encounters with typically skittish creatures are greatly increased. (Did you read that, photographers?)

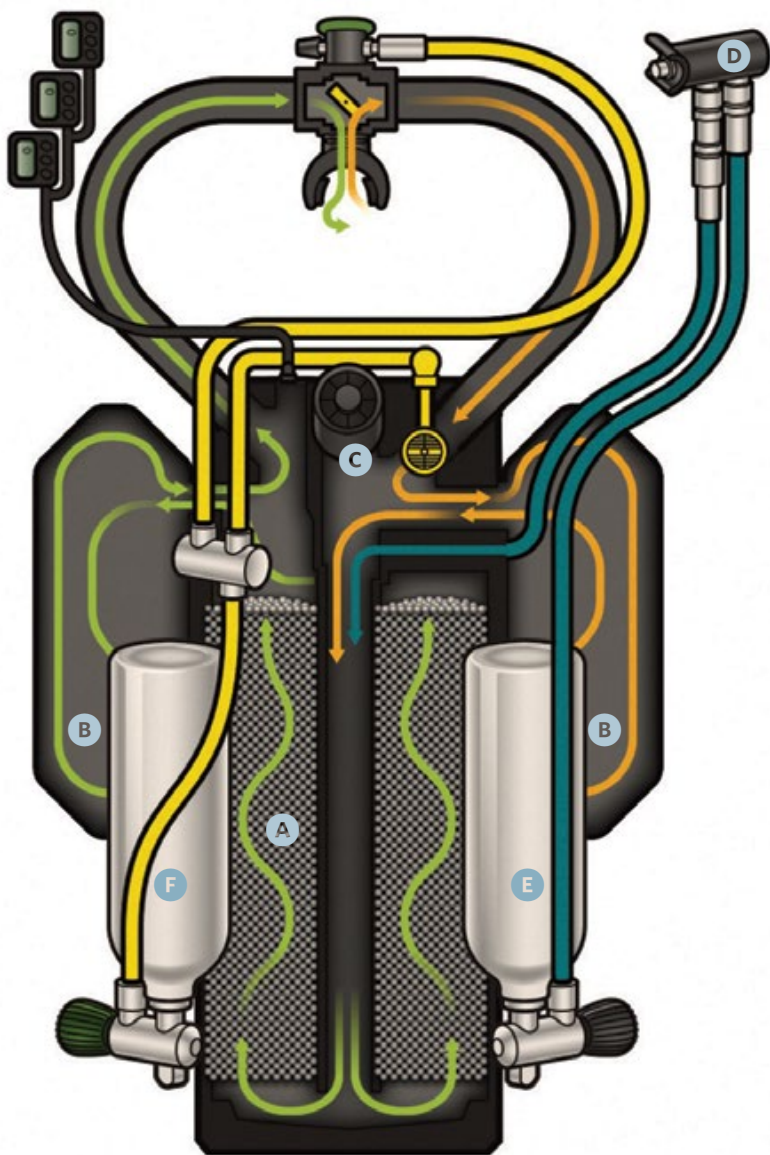
I USED TO ENVY REBREATHING DIVERS. NOT ONLY DID THEIR GEAR LOOK EXPONENTIALLY MORE BADASS THAN MINE, THEY ALSO WERE CONSPICUOUSLY ABSENT DURING SURFACE INTERVALS.





Exploring inner
space: CCR divers
at the edge of Eagle
Ray Pass, a deep reef
on Grand Cayman.





HOW A REBREATHING WORKS

Rebreathers are built around a one-way breathing loop (we've illustrated a Classic KISS). All rebreathers — oxygen, semi-closed circuit and closed circuit — "scrub" exhaled carbon dioxide. One hose takes the exhaled breath to the **A CO₂ scrubber**, and another brings it back (without the CO₂). After that, how the rebreather works depends on the specific rig, but generally, a **B counterlung** expands and contracts to accommodate your breathing. A **C relief valve** vents excess gas and the **D input valve** adds more oxygen, nitrox or trimix. The exhaust and input valve can be attached to the actual lung or on the scrubber head. The rebreather then replaces the oxygen you've breathed. **E A tank of pure oxygen** or **F mixed gases** injects fresh gas into the breathing loop. Sensors monitor the partial pressure of O₂ in the breathing gas on all rebreathers. A computer system on electronic rigs adds and adjusts the gases; on mechanical rigs, the mechanics of the design brings more breathing gas into the loop. These types have a manual override, so the diver can easily add gas. (Electronic rebreathers have this option also.)

(continued from page 50) with simplicity in mind, the unit uses mechanical components rather than electronic controls to deliver oxygen to the breathing loop. A hard-wired dive computer monitors all data, including depth, bottom time and the all-important PO₂ level. With a simple one-button, manual-add valve, the diver squirts oxygen into the loop to maintain the proper PO₂ level. In case of any electronic or mechanical failure, the diver needs to flip only a single lever to switch to a traditional open-circuit bailout system of air, and end the dive. It's a simple safety net for a complex machine.

Hitting the water, the learning curve goes vertical. With an aluminum 80-cubic-inch bottle of air slung to my left side and the double-hose breathing loop draped around my neck,

WHAT YOU NEED TO KNOW

Operator A few dozen fin kicks from Grand Cayman's famous North Wall, Divetech (divetech.com) offers complete services to CCR pilots, from absorbant to oxygen-friendly profiles, instruction, rentals, and expertise covering many different models.

When to Go Diving is good year-round, but savvy divers visit during spring for prime weather, and from June to October for the best visibility.

Dive Conditions Water temps average in the mid-80s in summer and high 70s in winter. Visibility regularly stretches past 100 feet.

Price Focus Underwater (Aug. 29-Sept. 5; focusgrandcayman.com) includes lodging, meals, six days of boat diving and unlimited shore diving, photo seminars, photo competition, unlimited absorbant and gas fills, and more. A typical rebreather certification course runs about \$1,500.

For Rebreather Options kissrebreathers.com, hollis.com, diverite.com

I ease off the dock at Cobalt Coast. This first dive will be shallow, with a 30-foot limit. The most difficult transition is relearning buoyancy control. The open-circuit method — inhaling and exhaling to make minor adjustments — is impossible with the constant volume of gas used by the rebreather. I bounce off the sandy bottom again and again for about 15 minutes before I acclimate and level off. Overcoming years of muscle memory — honed to achieve perfect trim — and becoming a poor-buoyancy poster child is beyond frustrating. But once the transition is achieved, it's a different world underwater. The only sounds are my own regular breathing and the inhabitants of the reef, which have never been so loud. Under the careful watch of Ebersole — who stops me occasionally to test my emergency problem-solving skills (what to do in case of equipment failure, when to activate the bail-out valve) — I glide euphorically for nearly two hours, with checking my PO₂ levels at regular intervals my only task-load.

Over the next three days, we'll drop on signature Grand Cayman sites, such as Black Forest, Lemon Wall, Big Tunnels and Lighthouse Point. I have dived these sites before, but the CCR offers a more intimate experience because of the extended bottom times, which often reach past two hours — even after descending to 130 feet. Enjoying more time to explore the reef without the pressure of conserving air a la open circuit is downright blissful. And everything you've heard about up-close animal encounters is true. At Black Forest, a sleek Caribbean reef shark doesn't speed away at first sight of our group of 10 — instead it hangs around, cruising a half-dozen lazy laps between divers.

On our final splash at Lighthouse Point, I interrupt a big green sea turtle gnawing on a sponge. It looks up, barely 3 feet from my face, and meets my gaze. I'm so close that I can count the wrinkles around its big, black eye. The stare-down lasts for minutes before the creature casually goes back to its lunch, unconcerned by my presence. In this moment I realize I am forever ruined for open-circuit diving.

DISADVANTAGES OF OWNING A REBREATHER

1. Read the Manual These are complicated machines that require careful assembly, mindful monitoring, disciplined maintenance and MacGyver-like troubleshooting skills. Lazy divers need not apply. **2. Unwelcome Mat** Finding dive operators that can supply absorbant and pure oxygen can be difficult in remote locations. And not

all boat captains will allow rebreather-friendly profiles.

3. Ghost in the Machine Because the unit relies on oxygen sensors and other electronics to function safely (redundancies aside), the chance for system failure is greater than with mechanical open-circuit diving. **4. One Size Doesn't Fit All** Although based on the same principles, every

rebreather is not the same, so there's a different and specific training and certification for each model. **5. Deep Pockets Required** With most units ringing up for between \$1,500 and \$4,000, the price of entry is not cheap, not to mention the price of absorbant and oxygen.



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TRAINING

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TRAINING

DIVE TRAINING

CROWD SCENE

WHEN YOU'RE FACED WITH AN UNDER-WATER MOB, THESE TIPS WILL KEEP YOU SAFER — AND MAXIMIZE YOUR FUN

BY ERIC MICHAEL

You awake with only one thing on your mind: “It’s the perfect day for a dive.” Conditions are ideal — eye-poppingly blue skies, sheet-glass seas, endless visibility. A pod of dolphins is launching barrel rolls over the boat’s bow wake as you pull up to the site that’s been on your bucket list for years. This is the stuff of divers’ dreams. There’s just one problem — 36 strangers on the boat all had the same idea. And by the looks of their nervous grins and fumbling ways, they’re fresh from learning to clear their masks in a far-off YMCA pool.

Let’s face it: Unless you’re pioneering uncharted waters in a remote corner of Earth, crowds are a part of diving. It’s the rare day when you get the boat to yourself. How you deal with high human density can make or break a good time. Kell Levendorf,

director of training for Divers Direct, based in Key Largo, Florida, works in one of the most popular dive destinations in the United States. In the past 30 years, the veteran dive instructor has shepherded flocks of students on jam-packed dive boats and sites. Along the way, Levendorf has learned a few useful crowd-control tricks.

TIDY UP YOUR NEST

The key to harmony on the dive deck is keeping your kit organized. “Police your area,” says Levendorf. “I have my guests set up their gear very specifically, so their fins are secured behind the tank, their mask is hanging on the spare tank, and everything is safely secured with the bungee cord. If there’s a separate weight

Patience, grasshopper: Better to wait an extra minute than giant-stride in on your buddy.

system, it should be on the deck tucked underneath so no one will trip over it. A diver should be able to sit down and gear up in one place, and go straight into the water. When divers have their gear spread all over the boat, bad things happen.”

SHUTTERSTOCK



DIVE TRAINING When you take the waterway more traveled, follow our tips for dealing with the crowd PG. 57 **IMAGING** Get the right shade of blue in your underwater pics with Adobe Lightroom PG. 59 **LESSONS FOR LIFE** How one diver put himself at risk for DCI PG. 61 **DIVING DOCTOR** A look at the causes of unexplained hits PG. 64

MINIMIZE MISTAKEN IDENTITIES

When there are three dozen divers at depth — and most are wearing black — it can be easy to lose track of your buddy or guide. “Keep a mental picture of your buddy’s gear,” Levendorf recommends. “Look for unique equipment, noticeably different colors, or any other attention-grabbing details that you can use to quickly recognize him or the dive leader. One of the best strategies is to memorize the shape and color of his fins.” To make his fins stand out, Levendorf uses a white paint marker to write “Follow” on one fin and “Me” on the other. “Fins are the first thing you’re going to look at during a dive and the easiest thing to see when you’re following,” he says.

SAFETY-STOP SOLUTIONS

An anchor line can become

a potentially dangerous bottleneck on an overcrowded safety stop, especially when strong currents or surge add stress to already fatigued divers. Levendorf recommends employing a jon line — a simple safety line that many tec divers use to tether themselves to the down line during decompression. “I attach a carabiner-and-hook combo to my BC, secure it onto the down line, and unstring 6 feet of line that helps save fatigue in my arms from holding on,” he says. For more-experienced divers in calm conditions, another solution is the fabled “human jon line,” in which divers hold onto one another’s fins perpendicular to the down line, like a human centipede. “It’s a great training exercise to work on neutral buoyancy,” Levendorf says. “And it looks really cool.”

GEAR SOLUTIONS

How can you be prepared for a mob? These two items can give you a little more space — on the boat and underwater.

AKONA COLLAPSING DUFFEL

This versatile dive bag is a padded regulator bag when traveling and a mesh bag when you’re diving. Even better: The mesh duffel zips into the regulator bag for a compact package, so when you and everyone else are packed into the boat like the proverbial sardines in a tin can, this bag packs up nearly as flat as a pancake.

\$58; akona.com

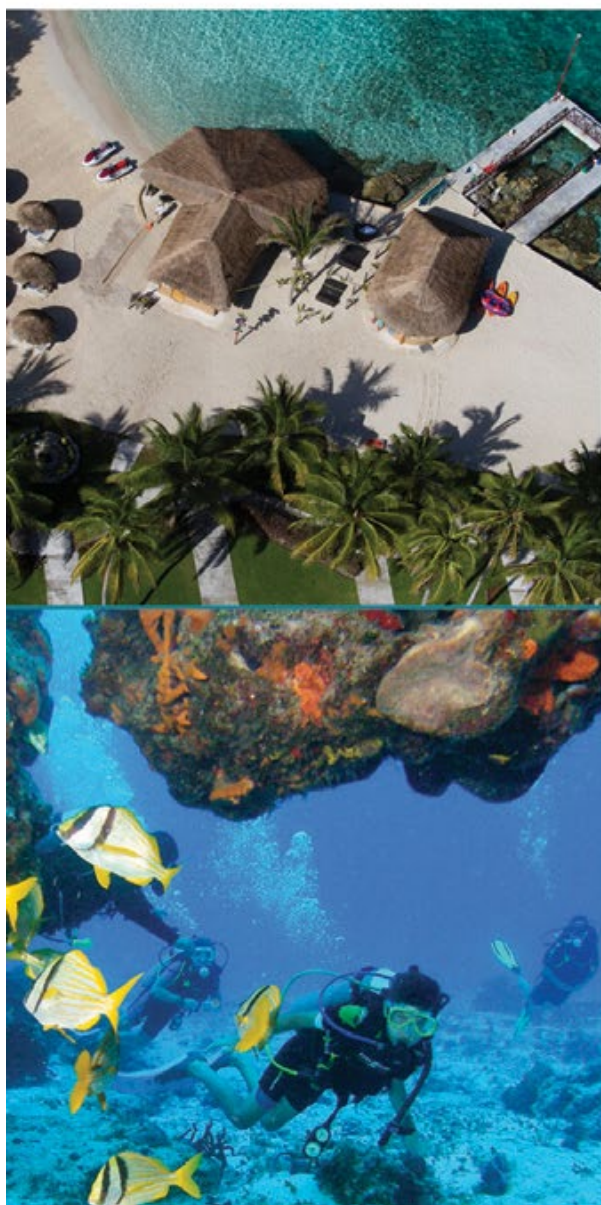
DIVE RITE JON LINE

On a crowded safety stop, this handy tool can help you manage the current without slam dancing into the other divers. Clip the stainless-steel carabiner to the anchor line, and unfurl the 5-foot nylon tether to find your own space while you off-gas. It stows neatly in a tough Cordura pouch that will clip to standard 2-inch BC webbing.

\$42.50; diverite.com



COURTESY IMAGES FROM LEFT: AKONA; DIVE RITE



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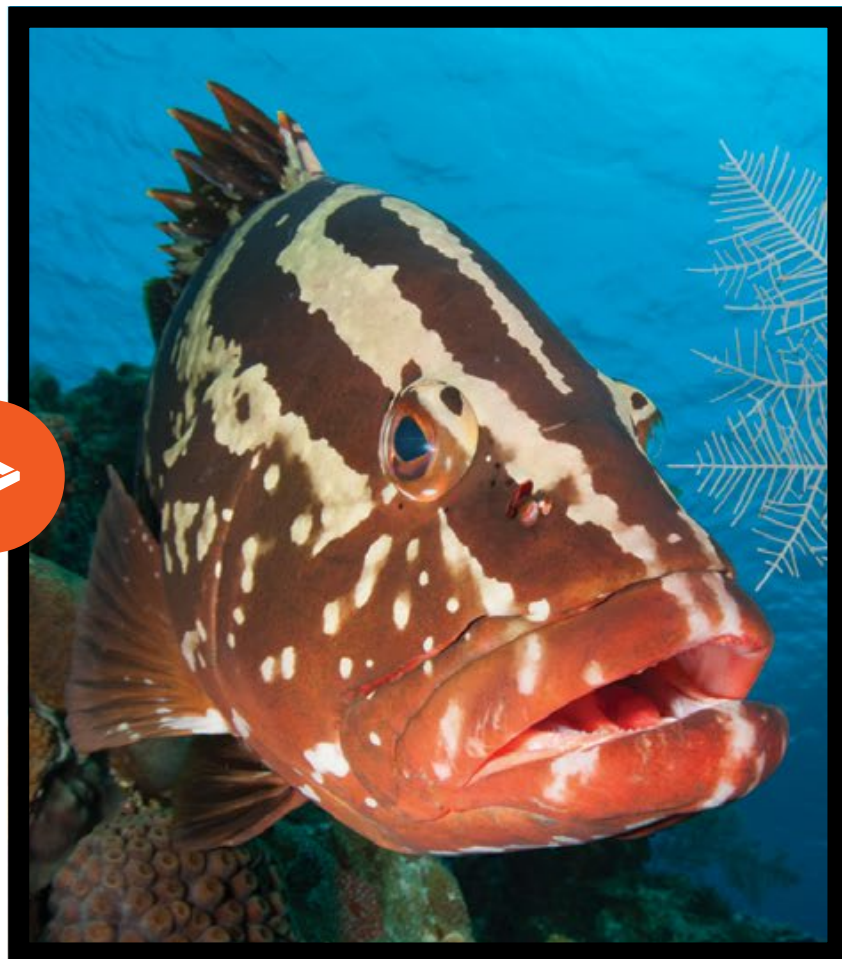
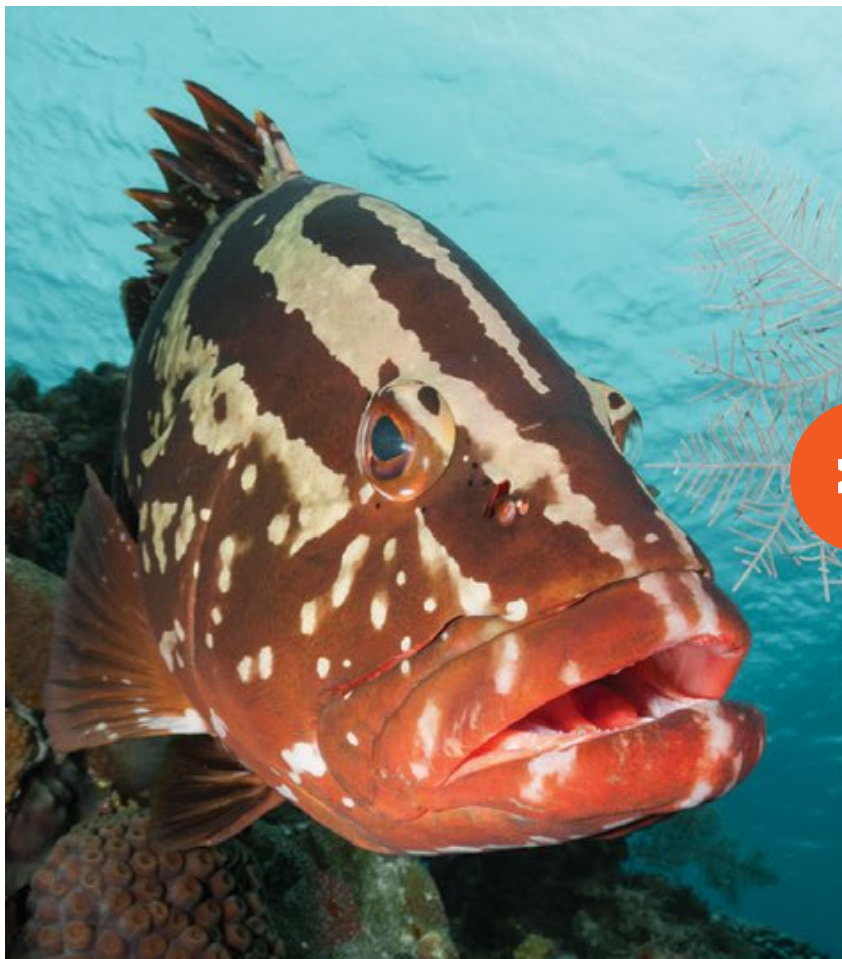
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TRAINING IMAGING

DIAL- A-BLUE

ADJUSTING THE
COLOR OF WATER
USING ADOBE
LIGHTROOM

TEXT AND PHOTOS BY
ERIN QUIGLEY

I attribute the phrase “dial-a-blue” to Berkley White, shooter extraordinaire and owner of Backscatter Underwater Photo and Video. I first heard White use the phrase to describe a specific shooting technique, but I’ve since discovered many cool ways to also dial-a-blue during the editing process. In this tutorial, I make use of the massively powerful Hue, Saturation and Luminance (HSL) panel in the Develop module in Lightroom 5 to dial in the color of the water.

HOW TO MAKE BASIC WATER-COLOR ADJUSTMENTS

For this tutorial, you’ll start with the Hue tab, but in real life you can use the panels in any order, and you don’t have to use all three.

1 Open the HSL panel and click on Hue.

2 Activate the TAT (diagram below), and click and drag up or down in the part of your image you’d like to change. The TAT icon will temporarily disappear as you drag, and you’ll see at least one Hue slider moving in

concert with your cursor. Lightroom is analyzing the pixels under the cursor, and adjusting each color accordingly.

3 Next, select Saturation. The TAT should still be active, so click and drag to change the intensity of the water color. Easy does it.

4 Finally, select Luminance, and click and drag with the TAT to adjust the lightness or darkness of the water.

5 Deactivate the TAT by clicking on it again in the panel.

6 Check out a before and after of your work.

The panel switch toggles the effect of just a single panel. The forward-slash key “/” displays your image from the very beginning, and “Y” displays a side-by-side comparison.

It’s important to remember that even though each slider in the HSL panel represents a single color, the sliders are still making global (whole image) adjustments. If you move a blue slider, it affects everything blue in your shot, including blue fish, blue coral, blue tunicate, your buddy’s blue fins ... you get the picture.

Panel ON/OFF
Switch

Targeted
Adjustment
Tool (TAT)



LIGHTROOM TIP

PANEL ON AND OFF This switch toggles individual panel effects on and off. Toggling the switch is a good way to check the effect of just the HSL panel.

TARGETED ADJUSTMENT TOOL (TAT) Water is often a combination of colors. The Targeted Adjustment Tool (TAT) lets you interactively adjust multiple colors at one time. Clicking on the tool toggles activation on or off. With the TAT active, you can click and drag up or down directly on the image to adjust whatever combination of colors are under the cursor.

LIGHTROOM TIP

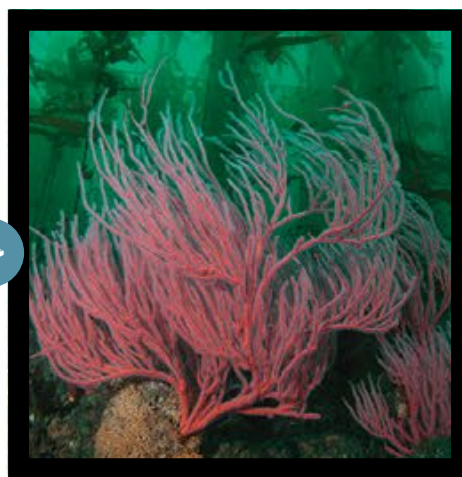
THE LIGHTROOM HSL PANEL

HUE SLIDERS affect the purity of individual colors in your photo. For instance, moving the blue Hue slider to the left shifts all blues in the image toward aqua, and sliding it to the right shifts them toward purple.

SATURATION SLIDERS affect the intensity of individual colors in your photo. A saturated color is vivid; desaturated colors appear faded. Too much saturation looks hokey and obliterates detail, so resist the urge to oversaturate.

LUMINANCE SLIDERS affect the lightness or darkness of individual colors in your photo. These sliders can be particularly useful if you want to enhance sun rays or dappled light.

» Erin Quigley is an Adobe ACE certified digital-imaging consultant and an award-winning shooter. GoAskErin.com provides custom tutorials and one-on-one instruction for the underwater photographic community.



BONUS TIP

DIAL-A-BLUE RECIPES

These are specific to certain scenarios, and they don't work in every instance, but OMG — it rocks when they do!

PURPLE-ISH WATER

» In the Hue panel, slide the purple slider to the left toward blue, and/or slide magenta to the left toward purple.

» In the Saturation panel, desaturate magenta by sliding left, and saturate blue and/or purple by sliding right.

» In the Luminance panel, move both the blue and purple sliders to the left to darken them.

UNWANTED

AMBIENT LIGHT

» In the Hue panel, nudge aqua a little to the right toward blue, and/or green a bit to the left toward yellow.

» In the Saturation panel, desaturate aqua by sliding to the left. Be careful not to go too far or parts of your shot will appear flat.

» In the Luminance panel, slide the aqua

slider toward the right to add pop.

DIAL-A-GREEN FOR COLD-WATER SHOOTERS

» In the Hue panel, slide aqua to the left, toward green.

» In the Saturation panel, saturate aqua by sliding right.

» In the Luminance panel, lighten aqua by sliding right.

ADVANCED TIP

The HSL panel can be transformed into a powerful local tool via Smart Objects, Smart Filters and layer masks in Photoshop CC.

1. Select an image in Lightroom, and go to Photo > Edit In > Open as Smart Object. Photoshop will open, and you'll see a tiny icon at the bottom right of the layer thumbnail.

2. Go to Filter > Camera Raw Filter. Camera Raw will open. Make changes in the HSL panel, and click OK. Your image will reflect the changes globally.

By painting in black on the Smart Filter layer mask, you can hide the HSL changes wherever you don't want them applied.

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PUSHED TO THE LIMIT

DON'T LET YOUR COMPUTER BE THE JUDGE OF WHAT'S SAFE FOR YOU **BY ERIC DOUGLAS**

Monte was having the time of his life: He'd done six dives the day before and was finishing up his third for day two, "diving his brains out," as he liked to say. Water temperatures were in the upper 60s, and visibility was good. He was feeling great — or at least he thought he was. As Monte finished up his safety stop at 10 feet, he began feeling dizzy and his stomach started to churn. Suddenly, he wasn't feeling so great anymore.

THE DIVER

An avid diver, Monte had made about 150 dives a year for the past 12 years. He was in good health, although he smoked a pack of cigarettes a day. At 38, he enjoyed living life. For him, that life definitely included scuba diving.

THE DIVES

Monte was diving with a group on a local liveaboard and took advantage of the unlimited diving, switching buddies when other divers didn't want to get back in the water. Monte used 32 percent nitrox on every dive, and planned his dives based on the equivalent air depth to give himself more bottom time.

On the first day, Monte made six dives — including one at night — all between 60 and 85 feet of seawater. On day two, he planned to do exactly what he had done on the first day. Still using the 32 percent nitrox, Monte made dives to 55 feet, 70 feet and 73 feet. Bottom times were between 33 and 43 minutes, according to his dive computer.

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photo by: Wally Diehl/Blue Ocean Ink

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THE ACCIDENT

At the end of his third dive on day two, Monte's computer warned him that he was ascending too quickly. He began dumping air from his BC and got himself under control as he swam to the anchor line to make a safety stop. A few other divers were on the line, so he settled down at 10 feet to off-gas.

Near the end of his three-minute stop, Monte noticed tingling all over his body, and his legs felt weak. On the surface, before he got out of the water, Monte threw up and needed help getting on board. He was dizzy and couldn't get his balance or walk.

The boat crew immediately put Monte on oxygen, alerted the Coast Guard and began heading for shore. Monte's weakness decreased, but the dizziness progressed to vertigo, and he remained nauseated. As his buddies helped him out of his gear, they noticed a red, marbled rash on his abdomen. It was sensitive to the touch.

A helicopter evacuated Monte to a hyperbaric facility for evaluation and treatment. Monte was diagnosed with neurological decompression illness with inner-ear involvement and skin

bends. He underwent a U.S. Navy Treatment Table 6 with two extensions (more time and oxygen). After follow-up treatments, and with time, he made a full recovery.

ANALYSIS

DCI is caused by a buildup of nitrogen gas, which occurs when the body can no longer handle the gas supersaturation. Monte pushed the limits, although he may have made similar dives before without issue. Just because your dive computer says you can make a dive doesn't mean you should,

because they take into account only depth and time. They don't analyze factors such as heart rate, breathing rate, gas uptake, or other factors such as fitness, body type and hydration.

Like most nitrox divers, Monte planned his dives using the equivalent air depth, instead of using the reduced-nitrogen content to give himself an added safety buffer. This gave him more bottom time on each dive, but it took away any potential safety factor. He also made dives that were increasingly deep, but not enough to be considered a factor.

LESSONS FOR LIFE

- 1 GET AND STAY FIT** You don't have to be a triathlete to dive, but general fitness is a must. Many dive accidents include divers who are in poor shape or are dangerously obese.
- 2 STOP SMOKING** Smoking impairs breathing and the body's ability to absorb and remove waste gases from the blood.
- 3 DIVE CONSERVATIVELY** Don't overload yourself with too many dives in any given day. Take a break and enjoy the sunshine.
- 4 UNDERSTAND NITROX** Nitrox can give you longer bottom times, or it can increase your safety margin on a dive — not both.
- 5 ASCEND SLOWLY** Rapid ascents can cause bubble formation as the ambient pressure exceeds the pressure of gases inside your body. Give your body the chance to remove the nitrogen naturally before it forms bubbles and causes problems.

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Monte's series of nine dives increased his gas load to the point that his body could no longer handle the stress. Consequently, symptoms appeared in dramatic fashion. He reported that he hadn't noticed any problems before the last dive. While that is entirely possible, it is also possible that Monte had mild symptoms of decompression illness before the dive but didn't notice them or connect them to diving. It's common for divers to ignore mild symptoms such as fatigue or minor joint pain in shoulders and knees, ascribing them to the stress and work of the dive.

General fitness also plays a role in DCI. Monte was in good health, although he did smoke and had a history of asthma. He did not report difficulty on his dives, but smoking impairs the body's ability to absorb oxygen.

To avoid a problem, Monte could have used the nitrox as if it were air. His bottom times would have been

**NEAR THE END OF HIS
THREE-MINUTE STOP,
MONTE NOTICED
TINGLING ALL OVER
HIS BODY, AND HIS LEGS
FELT WEAK.**

shorter, but he would have had an additional safety buffer. You can't enjoy longer bottom times and increased safety on the same dive.

Monte did his safety stop at 10 feet instead of the more-common 15 feet. The shallower depth and lower ambient pressure didn't help, but it probably didn't make things worse. Safety stops are not decompression stops. They are intended to reduce your gas load and add a safety factor to your dives, but Monte's gas load was so high that a slightly deeper safety stop wouldn't have made a difference.

Cutting down the number of dives, and resting, hydrating and eating well in between can decrease the likelihood of a problem. So would ceasing smoking, in Monte's case.

» **Eric Douglas** co-authored the book *Scuba Diving Safety*, and has written a series of adventure novels, children's books, and short stories — all with an ocean and scuba-diving theme. Check out his website at booksbyeric.com.

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MYSTERY HITS

OFTEN, DECOMPRESSION SICKNESS CAN BE A RANDOM EVENT, AND THE CAUSE REMAINS UNKNOWN

JAMES L. CARUSO, M.D.

» James L. Caruso is a 30-year veteran of the U.S. Navy, serving as ship's doctor, undersea medical officer and flight surgeon. His experience includes a fellowship in Diving and Hyperbaric Medicine at Duke University Medical Center; today he is Denver's chief medical examiner.

Q: I GOT AN UNEXPLAINED HIT. WHAT COULD HAVE CAUSED IT?

A: I am glad you used the newer term — “unexplained” — rather than the one we used in the past, “undeserved.” The older term implied that anyone who sustained a mystery hit (symptoms of decompression sickness without obvious cause) surely must have done *something* wrong during the dive to earn such an outcome. The reality is that two divers can complete an identical dive profile under identical conditions with only one of the divers developing symptoms of decompression sickness. Alternatively, the same diver can perform the exact same dive on two different days and end up with different outcomes.

In dive training, it is not always emphasized that dive tables — and therefore dive computers based on the same algorithms — have a failure rate. The original U.S. and Royal Navy dive tables were derived from mathematic calculations and tested on very fit, muscular military divers. It may also be a revelation that the tables were

not meant to be infallible, and some of the depth/bottom-time combinations were validated using a minimum number of test dives. In fact, the latest U.S. Navy tables use probabilities; it is acceptable that essential missions use higher-risk tables than those used for routine tasks.

Other factors that affect the development of decompression sickness include hydration status, strenuous physical activity before/during/after the dive, repetitive dives, and impaired local circulation as would occur with injuries. The risk of developing decompression sickness certainly increases as the diver approaches no-decompression limits, and would be greater for a diver who spends the majority of the dive at those limits. The bottom line: Diving has associated inherent risks that are minimized, though not completely eliminated, by excellent training and conservative practices.

While it's important to understand the causes of DCS, it's not always possible. If you had a true unexplained hit, you shouldn't dive until you undergo a full medical evaluation.

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THE BIG THREE

READY TO BUILD YOUR CONFIDENCE? THESE COURSES TEACH THE SKILLS EVERY DIVER SHOULD HAVE

BY PATRICIA WUEST



1 ADVANCED OPEN WATER Several critical skills — such as showing proficiency at deep diving — are part of most advanced open-water courses. “The typical new diver has a relatively narrow view,” says Floyd Devine, master scuba diver trainer for Divers Direct in Fort Lauderdale, Florida. “Imagine how they feel going down on a shipwreck in choppy seas with a moderate current.” Taking the Advanced Open Water course gives divers the confidence to deal with challenging conditions.

2 NAVIGATION Training in the course covers both compass use and natural navigation — how to read the current, the bottom contour and other markers. “It’s common to see divers ascend from a reef dive a hundred yards or more from a dive boat or their water exit, low on air, and with a long surface swim ahead of them in potentially hazardous areas of high surf, current and speeding watercraft,” Devine says. “Having good navigational skills underwater allows a diver to get back to the ascent line or shore exit point with plenty of air.”

3 RESCUE Training in this course spans everything from CPR and first aid to helping an unresponsive diver underwater. Widely accepted as the most challenging training a diver can complete, both physically and emotionally, the rescue course teaches divers “how to provide complex emergency aid and assistance to others,” says Devine. “It gives divers a level of confidence surpassed only by completing the professional levels such as Divemaster and Instructor.”

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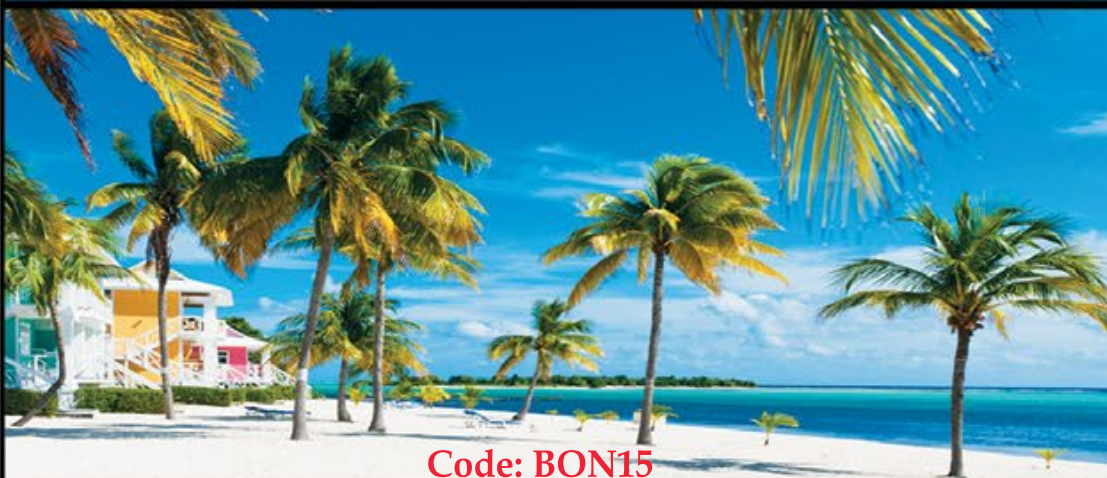


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DRIVE AND DIVE FLORIDA

HITTING THE TRAIL

TOURISTS FLOCK TO FLORIDA'S PANHANDLE FOR ITS GORGEOUS GULF BEACHES, BUT DIVERS COME FOR WHAT LIES BEYOND



BY PATRICIA WUEST PHOTOS BY DAVID BENZ

Let's start with the biggest: the 888-foot USS *Oriskany*. Diving the world's largest artificial reef is all my buddy and I talk about on the drive from Orlando to Pensacola, Florida. So we're a bit disappointed when we learn our first dive will be on the rubbly remains of the 315-foot *San Pablo*.

As we soon find out, we should have been excited. "We have hundreds of dive sites, but until *Oriskany* no one knew about our diving," says Capt. Douglas Hammock, at the helm of *H2O Below* as we pull away from the marina. "*San Pablo* is actually a great dive."

When *San Pablo* exploded off Pensacola's coast in 1944, locals conjured tales of espionage and foreign spies, and dubbed the wreck the "Russian Freighter."

But Franklin Price, a maritime archaeologist with the Florida Department of State, explains during our briefing what really happened to the ship. "It was a refrigerated cargo carrier that brought bananas up to Boston from Central America for years. It was torpedoed in 1942 at the dock in Puerto

Limon in Costa Rica by a Nazi U-boat." Franklin says that the ship was refloated and towed to the United States in 1944, and blown up during a top-secret government mission. The facts about *San Pablo*'s sinking were revealed only a few years ago, so the moniker Russian Freighter still persists among local divers.

We've come to explore four of the 12 wrecks on the Florida Panhandle Shipwreck Trail: *San Pablo*, the former fleet tug *Accokeek*, the Twin Tugs and the *Oriskany*. The state of Florida's Bureau of Archaeological Research created the trail; working with local dive operators, the bureau chose the wrecks for the overall quality of their diving, ease of accessibility and historic significance.

Price says that if you know what you're looking at, the *San Pablo* is a fascinating dive. "You get to see the history — the refrigeration

The Florida Panhandle Shipwreck Trail includes a bevy of dive sites, including the Twin Tugs (left) and *Oriskany* (right).



ITINERARY FLORIDA PANHANDLE

DAY ONE

Eat dinner and enjoy the sunset over Pensacola Bay, at the **Grand Marlin Restaurant and Oyster Bar** (thegrandmarlin.com), located on the Pensacola Beach side of the Bob Sikes Bridge. To ensure that the freshest ingredients are being used, the restaurant's chef Gregg McCarthy changes the menu daily at this elegant eatery. Prefer your fish under the sea? Steaks, chicken and vegetarian options are available. To get there from Pensacola, cross the Pensacola Bay Bridge (locals call it the Three-Mile Bridge) into Gulf Breeze, and take Hwy. 98 to the Pensacola Beach exit. Cross the Bob Sikes Bridge, and make an immediate left onto the service road to the restaurant.



DAY TWO

After making two dives on the Mighty O, it was late afternoon before we returned to the marina. We sat down for an early dinner at the picturesque **Red Fish Blue Fish** (redfishbluefishpensacola.com) on Via De Luna in Pensacola Beach. The restaurant is shabby-chic — it was built using repurposed shipping containers and Indonesian boat wood — and has delightful views of the bay. For your entree, choose between burgers, po' boys and seafood baskets prepared any way you like — just be sure to order the carne fries appetizer: hand-cut potatoes topped with Mexican spiced beef in gravy, sautéed green peppers and onions, and shredded cheese. You won't be disappointed.



DAY THREE

If you've got time for a surface interval, visit **YOLO Board + Bike** (yoloboard.com), at the intersection of 30A and 393 in Santa Rosa Beach, to rent a stand-up paddle board or demo newly designed gear. Never tried SUP? Sign up for a lesson with YOLO Board Adventure at the WaterColor BoatHouse (watercolorresort.com) on Western Lake in Santa Rosa Beach. One lesson, including paddle board and paddle rental, costs \$55 per person for groups of three or more.

After burning some calories, we had lunch at Bud & Alley's (budandalleys.com) on 30-A in Seaside. The restaurant prides itself on making locally sourced food; the grilled eggplant and zucchini sandwich was a winner. So was our rooftop view.



According to the Florida Panhandle Shipwreck Trail website, "Built shortly after World War II, the Mighty O served primarily in the Pacific, earning two battle stars for service in the Korean War and 10 battle stars in the Vietnam War." Sen. John McCain's final bombing mission was from the *Oriskany* — on Oct. 26, 1967, he was shot down and became a prisoner of war for more than five years.

Its massive size — about the length of three football fields — means you can't see it all on one dive. "It's the biggest thing that I have been diving on — the tower alone is bigger than many of the shipwrecks that I've dived," says Price.

Its depth also dictates your profile; you need extended-range certification to dive the ship's flight deck, which is located at 145 feet. We spend all our time on the barnacled control tower of the massive wreck. The top of the smokestack is at about 80 feet, and you can keep within recreational limits of 130 feet as you descend down on the tower.

We're entertained by barracuda, snapper and amberjack cruising the ship, but despite trying, we can't visually take in the ship's length. It's not until our safety stop, looking down, where we can truly appreciate the Mighty O's immense size. This colossal wreck has earned its nickname.

PANAMA CITY WRECKS

For our last day of diving the Shipwreck Trail, we make the drive to Panama City to explore the Twin Tugs and *Accokeek* aboard *Steel Slinger*.

Officially called the FAMI Tugs (Florida Aquatic and Marine Institute), the Twin Tugs were originally put

coils from when it was a banana boat. You also see the carnage from when it was destroyed."

Chris Hicks, one of the divemasters with *H2O Below*, chimes in: "It has more marine life than many of the other wrecks — the variety of life on *San Pablo* is a constant, no matter when you dive it."

Both men are right: The damage is evident — more than 3,000 pounds of explosives were used during the Navy's target practice — but so are the number of tropicals and bigger fish like red snapper, amberjack, and go-liath grouper swirling above

and around the wreck. A sandbar shark swims off as the first divers descend. We circle intact parts like the boilers from the steam engines, and dip in where explosives ripped the boat apart, finding macro critters like arrow crabs that have claimed a piece of twisted-metal real estate.

Also on the boat with us is Robert Turpin, marine resources manager for Escambia County. Turpin checks the status of the marine life on the wrecks several times a year. *San Pablo* is special to Turpin: He made his first dives on it in

1975. "Everybody deserves to know this is here," Turpin tells me, but I don't need more convincing. *San Pablo* is a great introduction to Pensacola diving.

THE "GREAT CARRIER REEF"

While Turpin has a connection to the *San Pablo*, he has an even bigger one to the *Oriskany*. "My stepdad served on the *Oriskany*, and I got to be part of the ship's sinking," he says. "A part of me is in that ship — blood, sweat and tears."

The *Oriskany* — sunk in May 2006, 22 miles off Pensacola — has quite a history.

FROM LEFT: COURTESY GRAND MARLIN RESTAURANT; COURTESY RED FISH BLUE FISH RESTAURANT; SHUTTERSTOCK

"IT'S THE BIGGEST THING THAT I HAVE BEEN DIVING ON — THE TOWER ALONE IS BIGGER THAN MANY OF THE SHIPWRECKS THAT I'VE DIVED."

WHEN TO GO

You can dive year-round, but for the warmest water temps, plan your trip between June and late October.

DIVE CONDITIONS

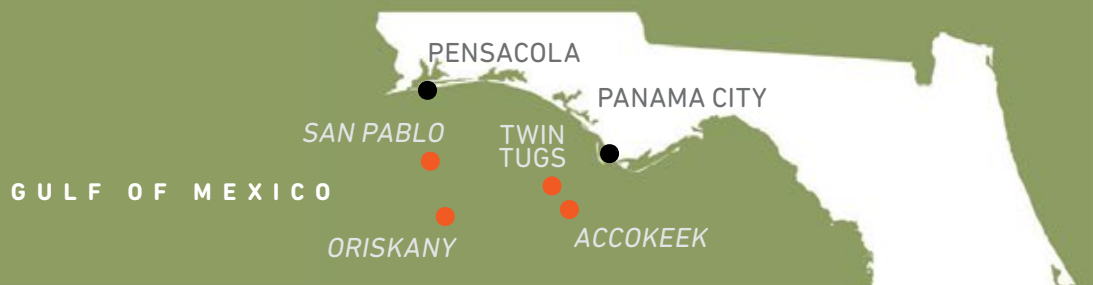
Water temperatures can range from the low 60s

in winter to the low 80s in summer. When we visited in August, surface temps were close to mid-80s. Pack a vest and hood, even in summer, if you are prone to feeling cold. We had great water clarity and no current on all our dives — the viz was close

to 80 feet on a couple of days, but expect 40 to 50 feet on average.

OPERATORS

H2O Below (ussoriskanydiver.com) • MBT Divers (mbtdivers.com) • Panama City Diving (panamacitydiving.com)



down bow to bow, but a Gulf storm pushed one atop the other — it's an interesting photo op on the way down or up. Fortunately for us, the only storm this day is a fish one — the tugs are smothered by a tornado of snapper and jacks. The shipwrecks rest between 85 and

95 feet; their positioning makes it look as if they've collided underwater — it's sobering to think about the power of the ocean.

"It's mind-boggling that a storm actually lifted one up and placed it atop the other," says Price, after we've reached the surface.

If diving on the tugs demonstrates the power of Mother Nature, on our next dive, on the 143-foot *Accokeek*, we come face to face with one of nature's most fearless fish, Atlantic goliath grouper — three of them, all seeming to stalk us.

Known to attack lemon

sharks, goliaths can get huge — the world record for a hook-and-line specimen is 681 pounds, caught off Fernandina Beach, Florida, in 1961.

"This wreck reliably produces goliath grouper encounters," says Capt. Pat Green of Panama City Diving. "The big resident is over 500 pounds, and not as shy as some of the goliaths on other wrecks."

Indeed. These three are all in the 400- to 500-pound range. They look like thick-set, defensive linemen in search of a meal after a big football game. Amazing fish.

Diving the former Navy supply ship, with its rec-friendly wheelhouse at 65 feet, is not only the perfect ending to our weekend of wreck diving, but it's also a reminder that we still have plenty more to explore beyond the beautiful white-sand beaches of the Panhandle.

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NEW JEWELS IN INDO'S CROWN



LET *THAI AGGRESSOR* SHOW YOU THE WAY TO PULAU WEH, INDONESIA'S LATEST DIVE HOT SPOT



STORY AND PHOTOS BY MICHELE WESTMORLAND

Every time I mentioned to dive colleagues that I was headed to Pulau Weh, I got the exact same response. "Lucky you — I've been to Palau many times!" they would exclaim. The names might be similar, but that one vowel makes the difference between landing in Micronesia or Indonesia, where I was headed.

Pulau Weh (Weh Island) is a tiny island off the northern tip of Sumatra, surrounded by the Indian Ocean and the Andaman Sea. *Weh* in Acehnese, the language spoken by the people of Aceh Province, means to move or go away. But I understand why the community didn't abandon this beautiful scenery and prolific sea life after the 2004 tsunami.

Ten years ago, one of the most devastating events imaginable occurred. Entire islands were obliterated by a powerful tsunami with waves nearly 50 feet high, carrying the power of several Hiroshima-size atomic bombs. Banda Aceh, where we boarded our ferry to Weh Island, was destroyed, and more than 150,000 people were killed. Today it's a vibrant, revitalized city with an impressive museum honoring those lost in the disaster. I came to dive, but what I gained was a deeper understanding of the strength of the human spirit. And local reefs have proved just as strong as the people of Aceh Province.

Since the tsunami, the underwater habitat has recovered and become a hot diving destination, especially for vessels like *Thailand Aggressor*. *Aggressor* is the

first liveaboard to operate out of Pulau Weh in cooperation with local dive operators. Its itinerary has something for everyone, from viewing unusual creatures in the shallows to riding strong currents through forests of gorgonian sea fans. The yacht visits more than 22 dive sites, with new ones being discovered frequently.

The biodiversity here aligns with many Indo-Pacific destinations. Canyons and cuts through underwater volcanic structures create scenes that make any diver hunger for more. Giant sea fans and sponges cling to rocky formations that resemble ancient and ornate architecture. Seemingly desolate shallows harbor fascinating creatures — some I've never seen before. In one location, bubbles from volcanic vents warm the body in a spa-like environment. With its exceptional crew, *Thailand Aggressor* certainly knows how to pamper.

After our dive at a site called the Underwater Volcano — a natural Jacuzzi where warm water bubbles up — many of us continued the treatment on the upper deck with a relaxing Thai massage.

Experiencing Thai cuisine was key for me; *Thailand Aggressor's* master chef pulled out all the stops, including the best hot chilies for aficionados of Asian cuisine. Other diners echoed the same sentiment: Make mine Thai, please!

PULAU WEH DIVE GUIDE

The first full day of diving got our blood pumping. The Canyon is the perfect spot for adrenaline junkies, where strong



current will take you soaring through amazing underwater landscapes. At nearly 100 feet, the canyon's grooves are filled with giant sea fans — nowhere else in the Indo-Pacific have I seen coral structures like these, a sentiment echoed by my fellow divers. "Never seen the likes of this before," exclaimed Peter Tongue, who has dived with *Aggressor Fleet* all over the world. No wonder there are so many schools of anthias, as well as an overwhelming assortment of other tropical species. It was



NEED TO KNOW

WHEN TO GO

Thailand Aggressor moves from its regular itinerary to Indonesia from mid-May to mid-August. The rest of the year, it covers Thailand's North and South Andaman Sea, as well as select trips to Myanmar (Burma).

DIVE CONDITIONS

There are all levels of diving available, so no one is left out. Visibility is incredible on the outer reefs. Try Gapang Jetty at high tide — it has amazing life around the pilings.

OPERATOR

Thailand Aggressor (aggressor.com, info@liveaboardfleet.com) is a 115-foot steel-hull yacht that carries up to 16 passengers in eight staterooms. The ship has a spacious, comfortable dive deck with a large dedicated camera area with multiple power outlets; diving in Pulau Weh is done from two rigid inflatables.

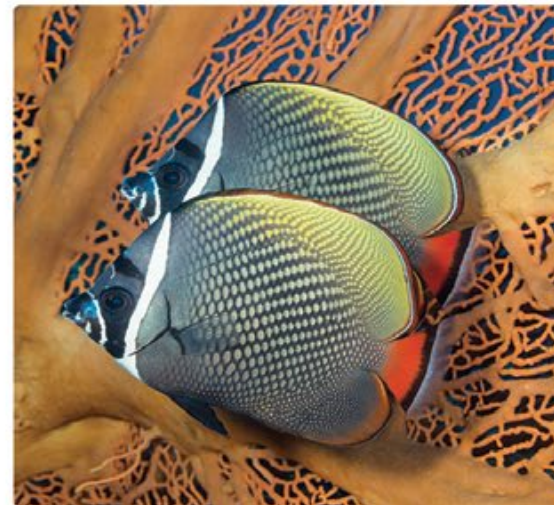
PRICE TAG

A six-day trip is \$3,290 per person, double occupancy. Transfers from Banda Aceh by ferry are included. A \$95 park fee is paid on board, and there is a 7 percent VAT tax on onboard purchases and park fees.

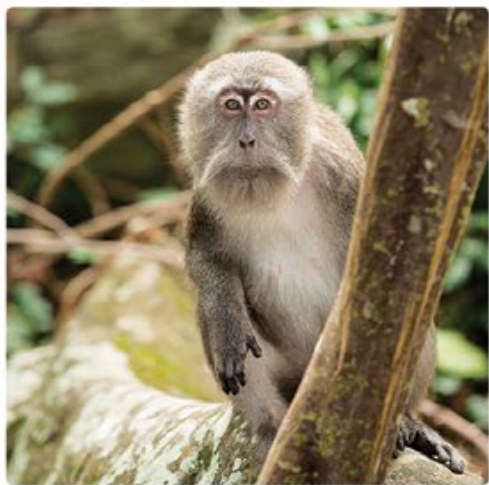
A giant moray rules its world at Limbo Gapang; enormous sea fans in the Canyon; a pair of white collar butterflyfish.

spectacular to see major-league tuna and snapper. The red-toothed triggerfish and fusiliers were so thick at times that they blocked our view of the reef — until a tuna makes a hit. BANG, like a gunshot, and the schools scatter, bringing the wall back into the scene.

Late-afternoon and night dives at a favorite site called Limbo Gapang



5 REASONS TO CHOOSE THAILAND AGGRESSOR IN PULAU WEH



01

AWAY FROM IT ALL

This is truly an exotic location. Cellphones? No. But occasionally you will be able to check your email.

02

A TRUSTED OPERATOR

Thailand Aggressor gives you the same confidence in service as any of the fleet vessels. TA has

will educate you about the event in 2004 — and the resiliency of the community. On Weh Island, you can visit Kilometer 0, the northernmost point of Indonesia; the volcano park; and see the landscape and wildlife of the island.

04

DIVE DIVERSITY

Adrenaline junkies rejoice! You'll get the ride of your life when it's a full or new moon. For those not so inclined, book your trip according to the lunar phase; you'll have plenty of opportunities to see cool creatures and reefs in calm water.

05

BE THE FIRST

Thailand Aggressor runs the Pulau Weh itinerary for only three months per year. That means you could be one of the privileged few to experience this emerging destination.

been updated and remains a comfortable boat, with big picture windows in the main-deck staterooms.

03

THE HUMANITY

Thailand Aggressor will make arrangements for you to visit the inspiring tsunami museum in Banda Aceh. It

offered a chance to see as many different creatures as possible. On one dive I found a grumpy old stonefish about the size of a football, and the creepy inimicus, with its clawlike appendages for walking on the ocean floor. The zebra moray — shy and difficult to photograph — has been on my bucket list for some 20 years; the opportunity to watch this animal tucked into a reef with a completely different species of eel as a companion was thrilling. Skipping along the bottom was another

SEEMINGLY DESOLATE SHALLOWS HARBOR FASCINATING CREATURES — SOME I'VE NEVER SEEN BEFORE. IN ONE LOCATION, BUBBLES FROM VOLCANIC VENTS WARM THE BODY IN A SPA-LIKE ENVIRONMENT.

hunter of the dark: the starry night octopus. It was mating season, and we counted numerous pairs of octopuses unfazed by voyeurs in wetsuits; they just kept right on copulating. "I've never seen so many cephalopods, arms entangled in romance," said diver Robin Faulkner, who seemed to spend the whole dive in one spot, hanging eye to eye with the octopuses.

The pilings of Gapang Jetty shelter innumerable sea creatures. Schools

of white collar butterflyfish hang near each post and move quickly to the next one if approached too closely. I spent a big chunk of time next to one of the wooden pilings that supported an anemone filled with clownfish. It was an excellent vantage point to peer down into the rest of the support structure and take in the whole scene.

Tokong is an outcropping of a rocky island that has two sites for incredible dive experiences. It is also one of the most popular dive sites in the area, for good reason. This rock drops down to around 72 feet from the surface, before sloping to around 130 feet. A huge variety of fish gather at this site, with bigger predators skirting the edges of the rock. On one of our dives, we were blessed with a pack of 30 monster-size tuna that came in close. The price we paid for this viewing spectacle was current; if not for the many areas where you can tuck behind the reef, it would be difficult and sometimes impossible to dive this location, one of the things that makes it so special. The sloping area of Tokong is carpeted with a garden of massive gorgonians secured on rock formations that give it the nickname "the moray condo." Giant and honeycomb eels occupy just about every crevice and overhang.

For divers who want to explore the newest of destinations, more Pulau Weh gems like these await, with new sites added to the itinerary all the time.

Look for day octopuses — the largest octopus found in the western Pacific — in rubbly reef terrain.



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TOP 100

THE PHILIPPINES



THE SECRET'S OUT: THOUGH THE SECOND-LARGEST ARCHIPELAGO ON THE PLANET DIDN'T SWEEP OUR ANNUAL TOP 100 AWARDS, ITS TOP 10 RANKINGS IN SEVERAL CATEGORIES SERVED NOTICE THAT DIVERS ARE DISCOVERING ITS UNDERWATER TREASURES.

STORY AND PHOTOS BY TANYA G. BURNETT AND KEVIN PALMER

With more than 4,000 reader votes tabulated in our 2015 Top 100 Readers Choice Awards, the “Pearl of the Orient Seas” — the Philippines — popped up in a number of categories, including Top 10 nods for Best Overall Diving and Best Overall Destination in the Indo-Pacific. We're not surprised. With diverse and unique underwater experiences found along its 22,000-mile-long coast in the western Pacific, this country ranks No. 1 for many divers.

SMALL WONDERS

Voted No. 2 in the Pacific and Indian Ocean region for Best Macro Diving, the Philippines' seascape never fails to please those on the hunt for unearthly small stuff. Experienced macro and muck photographers on their first trip to the islands are often surprised by the eccentric macro critters found in waters close to their arrival destination, Manila.

Just a three-hour drive south from the capital, Anilao's rocky shores are legendary for their prolific life — including a plethora of nudibranchs — and beautiful reefs. Sites such as Mainit Muck (aka Secret Bay) and Bethlehem, off Maricaban Island, are rich wonderlands filled with tiny curiosities

Readers love the islands' macro life, like this Coleman shrimp, and reefs like Tubbataha's (opposite).

such as seahorses, ghost pipefish, frogfish and mantis shrimp. In four hours, you can reach the lively dive harbor of Puerto Galera, sometimes called the Nudi-branch Capital of the World — you'll fill your logbook and macro lens with colorful sea slugs such as *Chromodoris lochi*, *Bornella anguilla* and *Nembrotha kubaryana*. The Dumaguete/Dauin area on the island of Negros is less than an hour's flight from Manila and offers a macro kingdom: Squat lobsters, wonderpus octopuses and pipefish are among the subjects found mere fin kicks from the beach.

WRECK DELIGHTS

In 1941 the Philippines were a United States Territory and

the site of some of the most dramatic battles of World War II. During the Philippines Campaign, American and Filipino soldiers fought side by side under the most difficult conditions imaginable. The invasion by the Japanese Imperial forces and the campaign to expel them left

ANILAO'S ROCKY SHORES ARE LEGENDARY FOR THEIR PROLIFIC LIFE — INCLUDING A PLETHORA OF NUDIBRANCHS AND BEAUTIFUL REEFS.

visiting divers with some spectacular WWII wrecks that are well worth visiting — and landed the country a Top 10 ranking for Best Wreck Diving in the Indo-Pacific.

Northwest of Manila, Subic Bay is a protected harbor used by the United States, Spain and Japan at various times. The treasure trove of wrecks here is accessible year-round, and ranges from Japanese and U.S. naval vessels, including the 360-foot USS *New York*, to a Spanish galleon just outside the bay. Coron, a sleepy island north of Palawan Island, is home to the wrecks of the Japanese supply fleet sunk in September 1944, including the 482-foot *Irako* and the 550-foot *Okikawa Maru*. Coron's remote location has allowed spectacular corals and other marine life to flourish on many of the sunken vessels.

PROTECTED PARKS

With world-renowned Tubbataha Reefs Natural Park, a UNESCO World Heritage Site, among its natural treasures, it shouldn't be a surprise that the islands earned a Top 10 award for Overall Best





NEED TO KNOW

WHEN TO GO

The period of best weather starts between October and December, and often continues into early June. Typhoons are more probable July to October but usually trend to the northern islands. Some areas are much more affected by weather patterns, so it is wise to consult a local operator.

TRAVEL TIP

The first 30-day visa is free. If you stay longer than that, be sure to get a 60-day visa for \$30.

DIVE CONDITIONS

Water temperatures range between 70 and 86 degrees F but are warmest March to June. November to February can be highly variable, and cold upwellings can occur any time. Coastal viz varies, depending on rain and tidal flow. Forty to 60 feet is typical, but viz off outlying atolls or islands can reach more than 100 feet.

FOR MORE INFO

scubadiving.com/philippines



Diving. Tubbataha is comprised of two main atolls — and one remote reef — that serve as a marine nursery for much of the Sulu and Sulawesi seas.

These shallow reefs are reached only by liveaboard, and for just a few months of the year due to weather. Charters often sell out a year in advance, but for the lucky few who manage to book a trip, the crystal-clear waters are another world.

The fields of pristine hard coral and the massive schools of fish are like nowhere else in the Philippines. Count on seeing

big grouper and tuna, whitetip and blacktip sharks, and schooling jacks in the hundreds. Also possible are manta, whale shark and hammerhead sightings.

The sheer walls of Apo Reef can also be reached only by liveaboard, and the remote wilderness provides surprises at any moment. Big discoveries abound, but so do small ones, with many smaller species of fish that are not found in the coastal regions.

Danjungan Island — off southwestern Negros — is a quiet, off-the-radar reserve where juvenile blacktip sharks hunt in the

clear-water mangroves, and the surrounding reefs and seamounts are visited mainly by volunteers conducting fish counts. Access is from a few isolated resorts on Negros.

FINS AND FLUKES

One-of-a-kind is not hyperbole when it comes to the little island of Malapascua, the only known thresher shark cleaning station in the world that is within recreational dive limits. The island takes some work to get to — first, a flight to Cebu, then several hours' drive north, and finally a ride in a bangka boat (an out-

rigger canoe) to the perfect white sand beach of Malapascua — but this only adds to the magic of the place. Boat departures to Monad Shoal are often before dawn, as the cleaning stations are most active in the morning. Nothing can prepare divers for their first encounter with a 12-foot thresher shark — you'll be hypnotized by its sensuous, ribbonlike tail fin. Enormous pelagic mantas also cycle in to be cleaned.

WHERE THE WHALE SHARKS ARE

Whale sharks can appear anytime and anywhere in the

OPPOSITE: SHUTTERSTOCK



Philippines, but there are some places that have become very reliable, such as Oslob on Cebu, Donsol on Luzon, and Southern Leyte.

Large aggregations of whale sharks are common in Donsol from December to May, though this can vary from year to year. The whale shark tour boats are well established and plentiful. Oslob is famous for the local fishermen who attract small fish by scattering dry brine shrimp on the water's surface and then netting the fish. As a byproduct of this method, a bevy of whale sharks hang around all

year, slurping brine shrimp. They now ignore the canoes full of snorkelers who roll in fewer than 100 yards from shore. Southern Leyte is less crowded, with only a few land-based resorts and an occasional liveaboard offering encounters with the planet's biggest fish.

CURRENT-SWEPT REEFS

The Philippines is a crazy quilt of interlocking islands, seas and shoals. A tremendous amount of water swirls around the volcanic landforms, creating reefs that are almost constantly swept by currents. The reefs are home to large schools of dazzling reef fish pulsing over the hard and soft corals. Anthias, snapper, jacks, butterflyfish, and jewel-like damsels form in huge numbers, and offer divers a mesmerizing marine-life panorama. Dozens of dives are concentrated around the current-washed shores in the Southern Visayas, Apo Island and Verde Island.

SPLENDOR IN THE GRASS

Dugong encounters are rare these days thanks to their shy nature, mishaps with boat propellers, and loss of habitat. Only in a few locations in the world can you reliably find them and

hopefully get close enough for images. In the Philippines, this marine mammal prefers to eat the long sea grass found in the waters around Dimakya Island. While they are in graze mode, dugongs will largely ignore people, but once they are satiated, dugong hind quarters might be all you see.

Fortunately, green sea turtles also feed on the sea grass here, and by late afternoon, they can often be found blissfully munching this marine "lawn." Dugong season is generally March to June, when the winds are calmer — which also makes spotting them easier.

SUBTERRANEAN EXPLORATION

Scattered throughout the archipelago is a unique topography rich in limestone substrate pockmarked by unmapped caves and caverns that only a few highly trained divers are now discovering. Even though the islands nabbed a Top Five spot in the Readers Choice Awards for cave diving in the Indo-Pacific, this is a young sport in the Philippines and would require a bit of research to undertake. Find the right connections, and a handful of experienced cave divers can make it happen.

TOP 100 PHILIPPINES

EAT

To fully immerse yourself in the Philippines, sampling the traditional cuisine is a must. **Lechon**, an entire pig spit-roasted over coals and served with liver sauce, is a favorite throughout the archipelago. Or you can grab a piping hot bowl of bulalo, a soup made from the shank and marrow of Batangas beef boiled for hours to bring out the rich flavors. Picky eaters take solace, there are plenty of Western-inspired restaurants too.

DRINK

Rumor has it that Princess Diana once said the best **mangoes** in the world come from the Philippines — and we certainly won't argue with royalty. Be sure to order yourself a freshly blended smoothie or cocktail crafted from the islands' famous fruit. Trust us, your taste buds will thank you.



SLEEP

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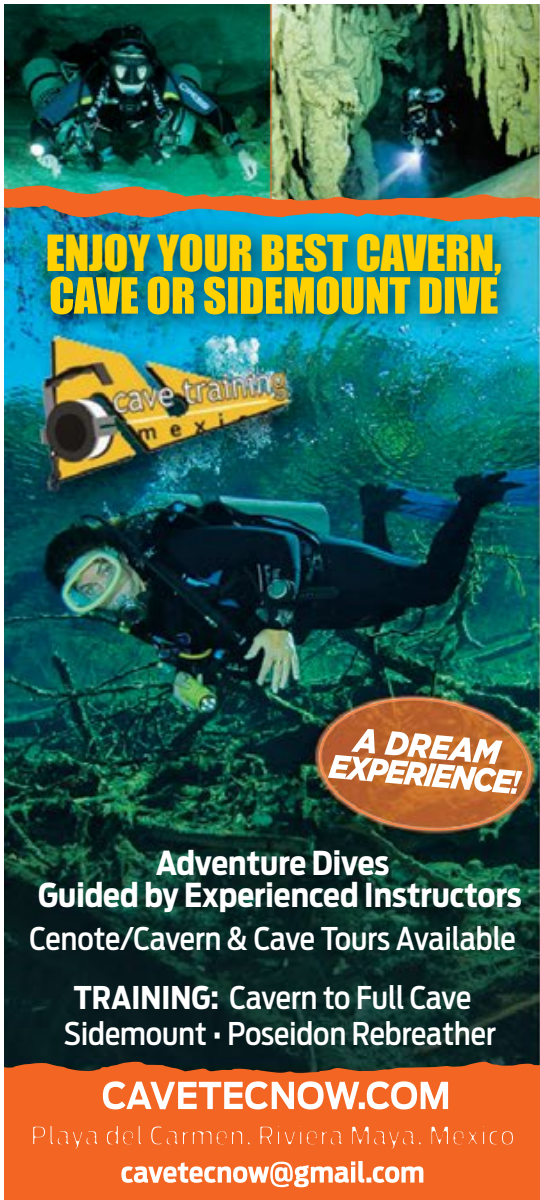


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LOOK



PHOTOGRAPHER Alex Tyrrell **LOCATION** Sabang Bay, Philippines

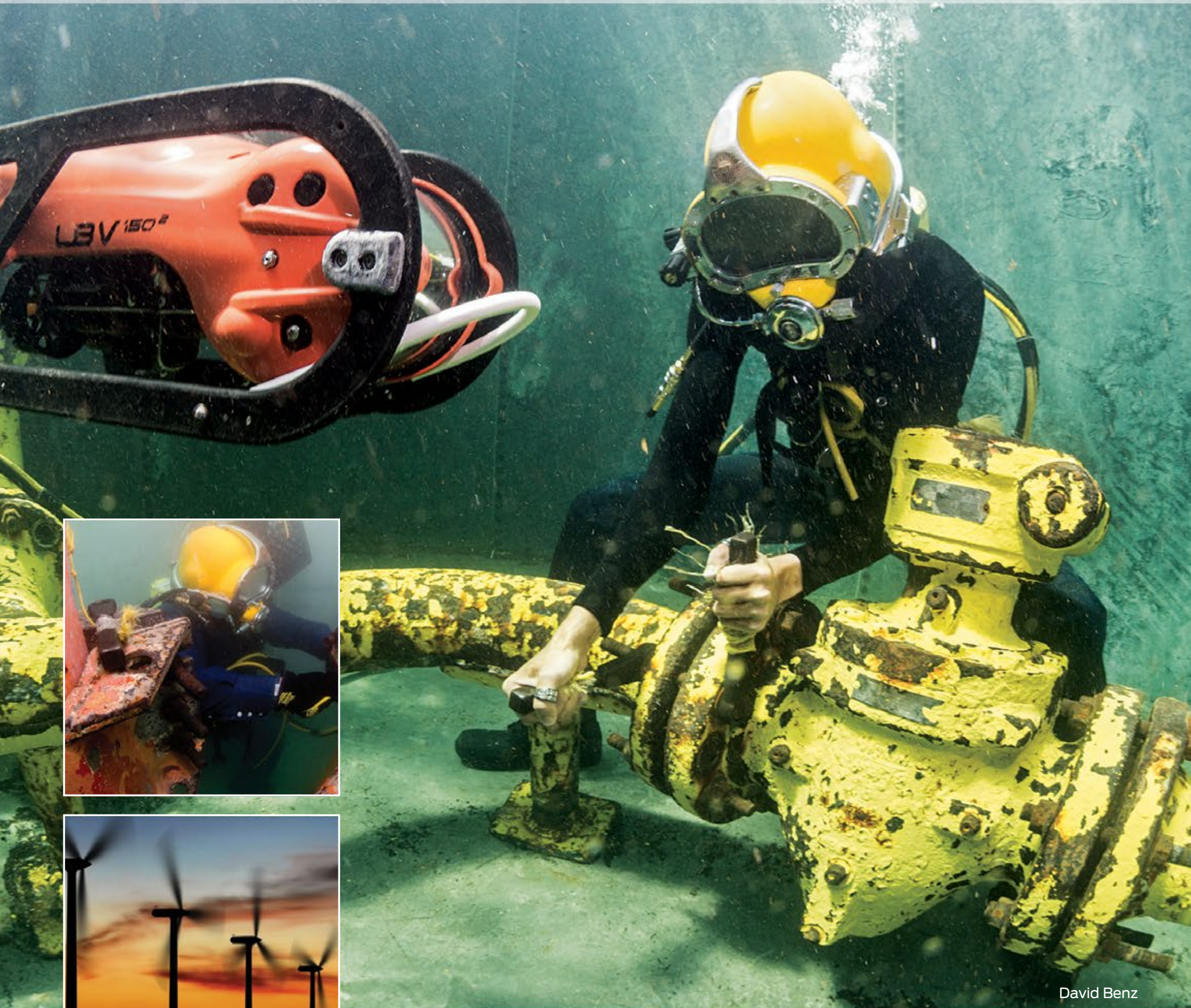
ABOUT THE SHOT The nocturnal reticulate stargazer buries itself in the sand, with only its face protruding, waiting for unsuspecting prey to swim overhead. To get the shot, I used a Nikon D200 in a Subal housing, 60mm Nikkor lens at $f/22$, $1/250$ sec, ISO 100, and an Inon Z240 strobe with snoot to illuminate the stargazer's camouflaged face, making it stand out from the surrounding sand.

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